

JOURNAL

OF THE

AMERICAN VETERINARY MEDICAL ASSOCIATION

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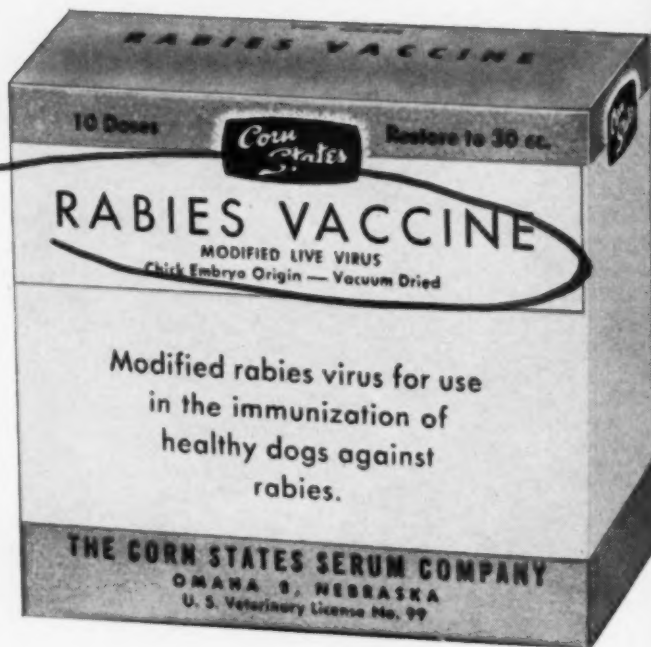
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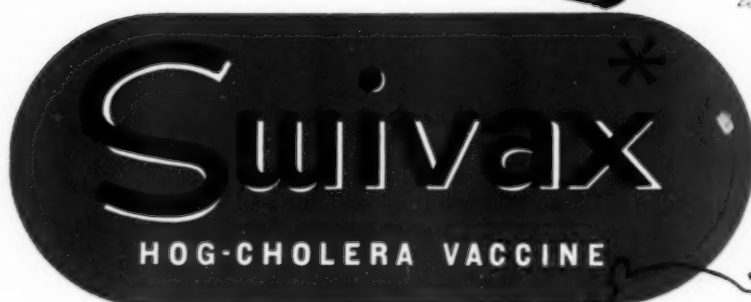
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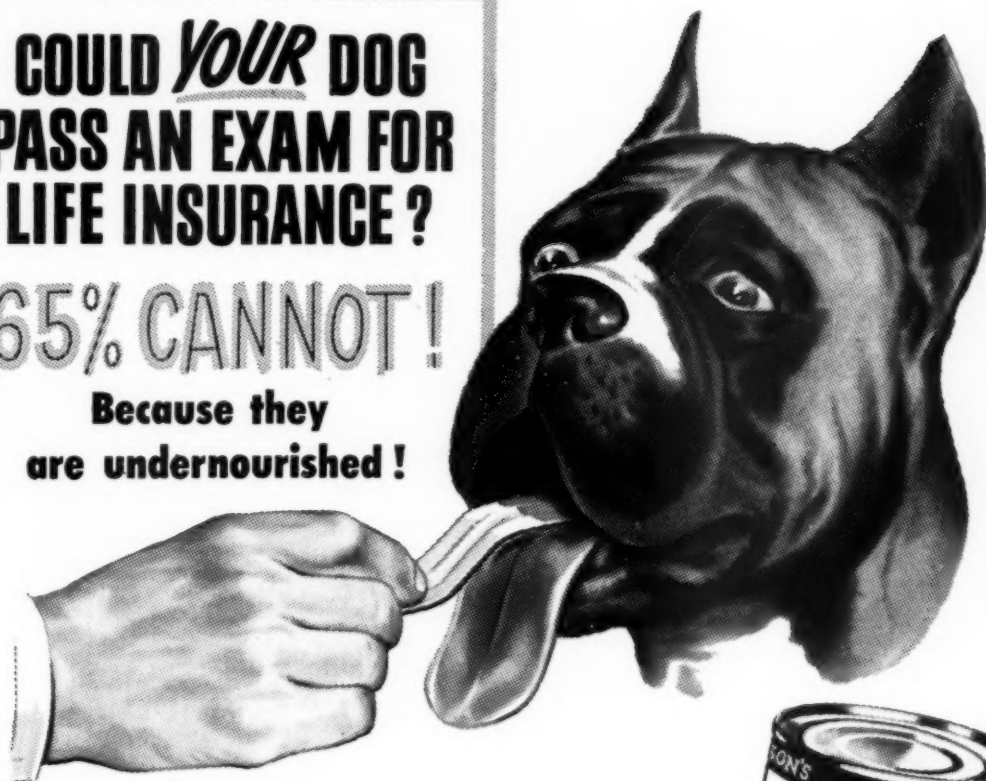
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AVMA ★ Report

—Veterinary Medical Activities—

✦ President J. A. McCallam appeared on the programs of the Annual Conference for Veterinarians, University of Pennsylvania, Philadelphia, January 5-6; the Cornell Conference for Veterinarians, Ithaca, N. Y., January 6-8, where he also spoke to the student chapter; the Tennessee V.M.A., Nashville, January 11-12; the Indiana V.M.A., Indianapolis, January 13-15; and the Minnesota V.M.A., St. Paul, January 25-27.

★ ★ ★

✦ President-Elect A. H. Quin appeared on the program of the annual meeting of the Ontario Veterinary Association, Toronto, January 14-16; the Iowa V.M.A., Des Moines, January 19-21, and at the Annual Conference for Veterinarians of the North Carolina Association, Raleigh, January 27-29. On January 24, he gave the address at the dedication of the new veterinary hospital at Texas A. & M. College (*see p. 172*).

★ ★ ★

✦ Editor-in-Chief W. A. Aitken appeared on the program at the Annual Conference for Veterinarians, University of Pennsylvania, Philadelphia, January 5-6, and on the program of the Iowa V.M.A., January 19-21 at Des Moines.

★ ★ ★

✦ Executive Secretary J. G. Hardenbergh was on the program of the Inter-mountain V.M.A. in Salt Lake City, January 18-20, and the midwinter conference of the California V.M.A. at Davis, January 25-27. In between the Salt Lake City and Davis meetings, he met with the Local Committee on Arrangements for the AVMA Convention in Seattle, Aug. 23-26, 1954.

★ ★ ★

✦ Russell G. Rongren, director of membership services, participated in a panel discussion on the topic "Public Relations and You", at the Ohio State V.M.A. meeting, Columbus, January 6-8.

★ ★ ★

✦ Assistant Executive Secretary H. E. Kingman met with the Minneapolis Convention and Visitors Bureau in Minneapolis, January 13 to observe a convention set-up in the Minneapolis Auditorium and make advance plans for the AVMA Convention to be held in that city in 1955. While in the Twin Cities, Dr. Kingman visited the veterinary school at the University of Minnesota and spoke to the student chapter.

★ ★ ★

✦ Arrangements have been made for the showing of the AVMA exhibit on Neoplasms of Domestic Animals at the forthcoming Annual Clinical Conference of the Chicago Medical Society, March 2-5, 1954.

★ ★ ★

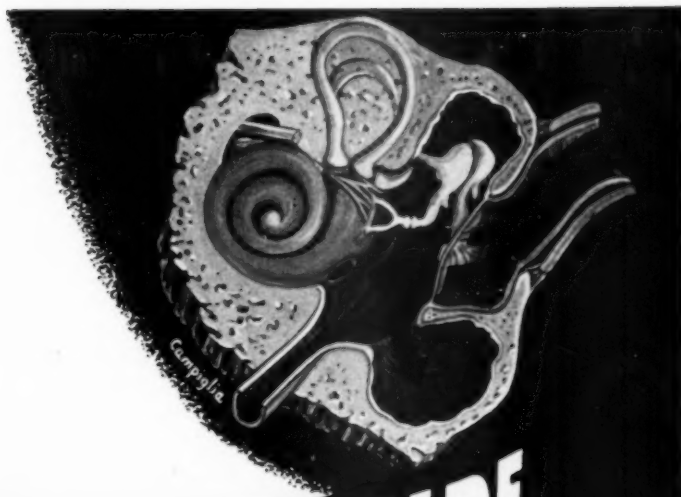
✦ A group of about 25 officers of the Army and Air Force Veterinary Corps in attendance at the Dairy and Meat Hygiene School at the Chicago Quartermaster Depot visited Association headquarters on Dec. 9, 1953. Members of the staff spoke to the group on the organization and activities of the AVMA and other professional matters.

★ ★ ★

✦ Dr. G. Maestrone, professor of veterinary hygiene and infectious diseases at the veterinary school in Milan, Italy, visited the Association offices, Dec. 23, 1953. Dr. Maestrone is temporarily doing postgraduate work at Iowa State College, Ames.

★ ★ ★

✦ During the holiday season, representatives of two student chapters visited the AVMA offices, Mr. Donald E. Nickerson, Kansas State College, and Mr. Norman D. Jones, University of Illinois. The AVMA staff extends a cordial invitation to all members to drop by whenever they are in the Chicago area.



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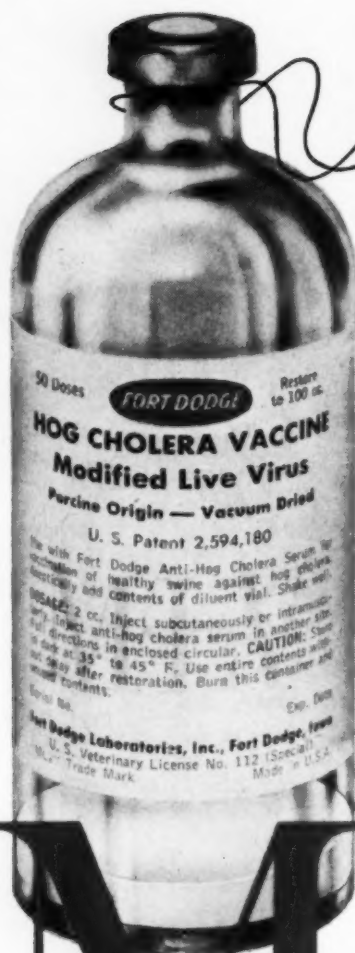
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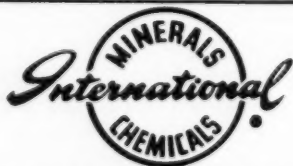
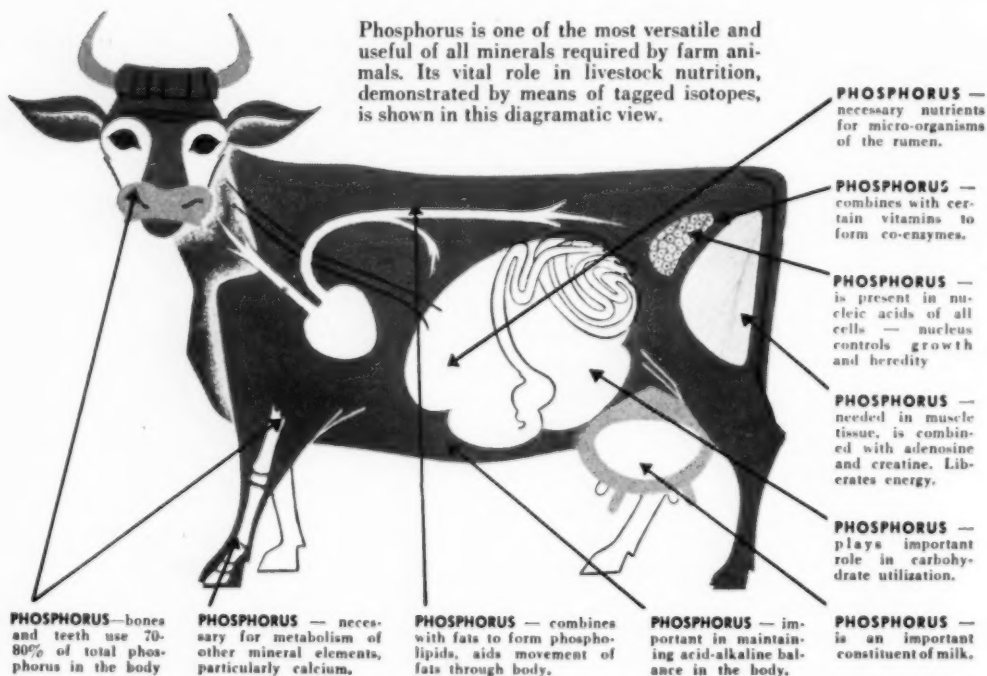
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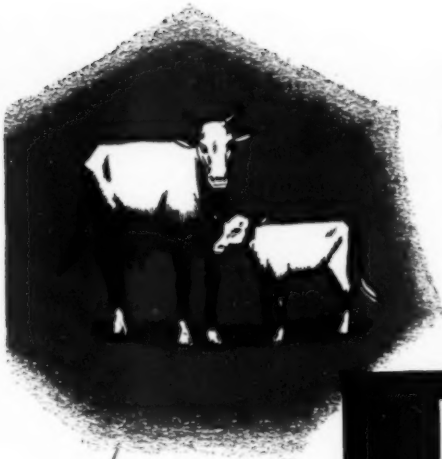
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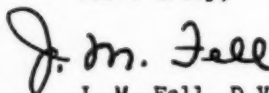
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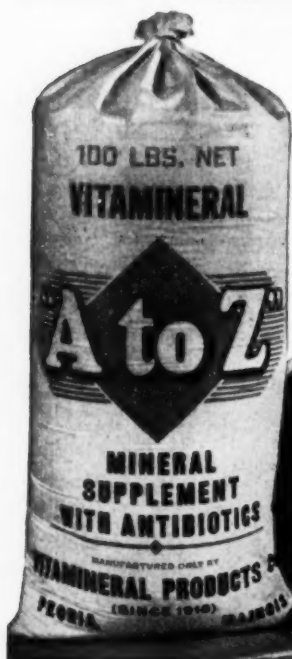


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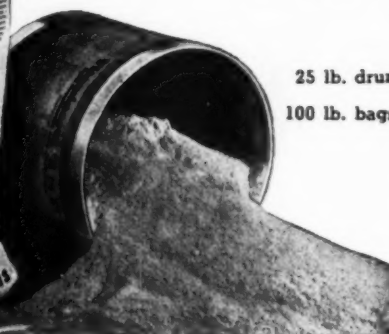
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*Klausman, B. S.: The Use of a New Chemotherapeutic Agent to Arrest Bleeding in Animals, *Vet. Med.* 46:282, 1951.




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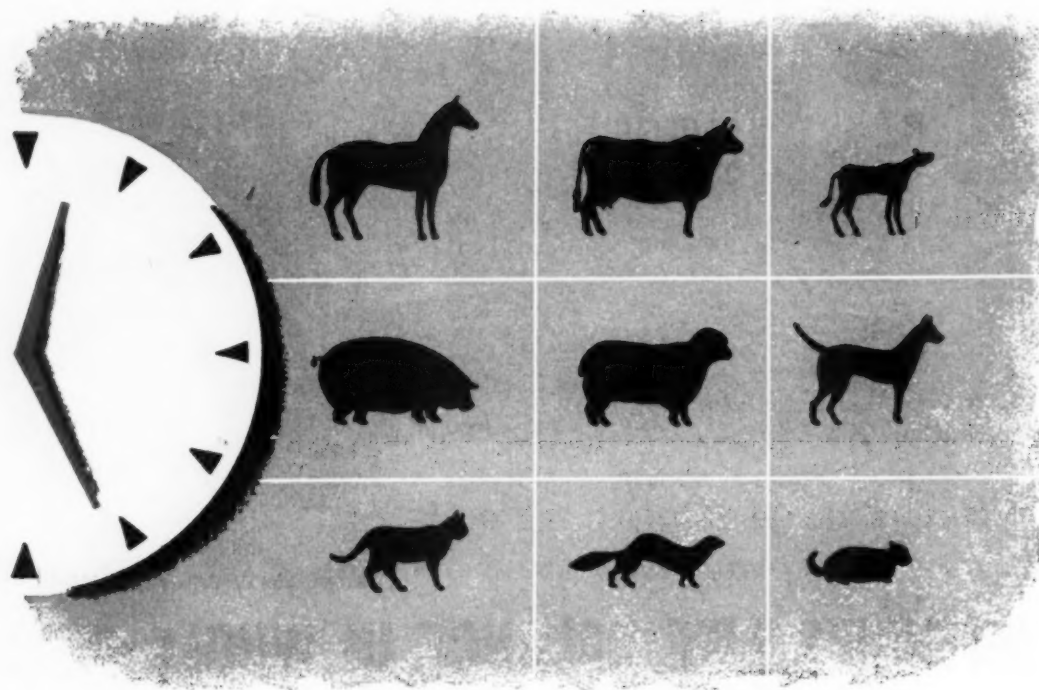
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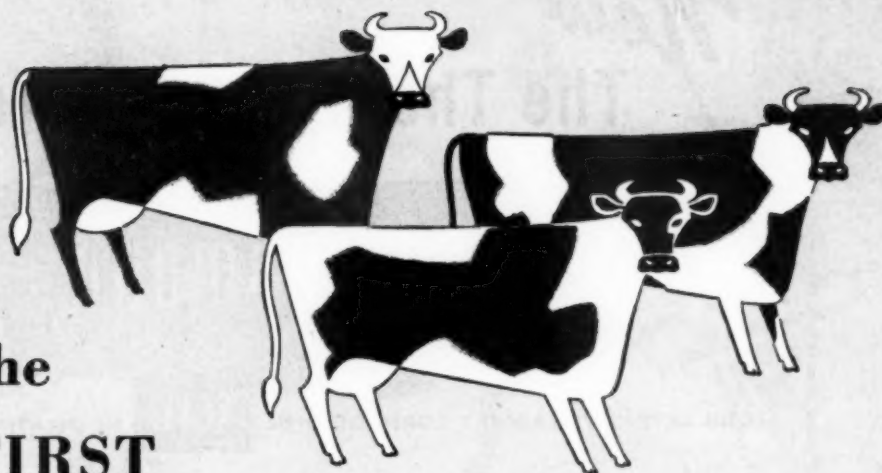
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¹: Shaw, J. C., Hatzioles, B. C., Leffel, E. C., Chung, A. C., Gilbert, Janet: Studies on Ketosis in Dairy Cattle XVI: The Pituitary-Adrenal Cortical Syndrome 251-256. The North American Veterinarian, April 1953.

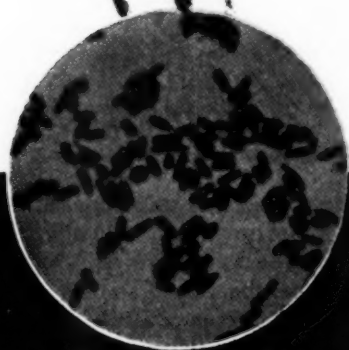
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1. Pratt, R.; Dufrenoy, J., and Strait, L. A.,
J. Bact., 55:75, 1948.

* Patent applied for.

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

Louisiana State University. Annual conference for veterinarians. Louisiana State University, Baton Rouge, La., Feb. 3-4, 1954. W. T. Oglesby, Department of Veterinary Science, chairman.

Wisconsin Veterinary Medical Association. Annual meeting. Schroeder Hotel, Milwaukee, Wis., Feb. 4-6, 1954. B. A. Beach, Madison, Wis., secretary.

Nevada State Veterinary Association. Annual meeting. Reno, Nev., Feb. 5-6, 1954. Edward Records, Box 9175, University Station, Reno, Nev., secretary.

Vermont Veterinary Medical Association. Annual winter meeting. Hotel Berwick, Rutland, Vt., Feb. 6, 1954. W. D. Bolton, University of Vermont, Burlington, Vt., secretary.

Illinois State Veterinary Medical Association. Annual meeting. Morrison Hotel, Chicago, Ill., Feb. 10-12, 1954. A. G. Misener, 6448 N. Clark St., Chicago 26, Ill., secretary.

Colorado A. & M. College. Annual conference for veterinarians. Glover Veterinary Hospital, School of Veterinary Medicine, Colorado A. & M. College, Feb. 15-17, 1954. O. R. Adams, director of veterinary clinics.

Arkansas Veterinary Medical Association. Annual meeting. Hotel Marion, Little Rock, Ark., Feb. 21-23, 1954. W. L. Thomas, 906 Broadway, Little Rock, Ark., secretary.

Missouri Veterinary Medical Association. Annual meeting. Hotel Continental, Kansas City, Mo., Feb. 22-23, 1954. Paul L. Spencer, P.O. box 283, Jefferson City, Mo., secretary.

Alabama Veterinary Medical Association. Annual meeting. Admiral Semmes Hotel, Mobile, Ala., April 4-6, 1954. M. K. Heath, Auburn, Ala., secretary.

Washington, State College of. Annual conference for veterinarians. College of Veterinary Medicine, State College of Washington, Pullman, Wash., April 8-10, 1954. John R. Gorham, Department of Veterinary Pathology.

North Central Iowa Veterinary Medical Association. Annual meeting. Warden Hotel, Fort Dodge, Iowa, April 15, 1954, from 10:00 a.m. to 5:00 p.m. B. J. Gray, Box 797, Fort Dodge, Iowa, secretary.

Texas Conference on Diseases in Nature Transmissible to Man. Annual conference. A. & M. College of Texas, College Station, Texas, April 12-13, 1954. John P. Delaplane, A. & M. College of Texas, College Station, Texas.

Pennsylvania, University of. Annual post-graduate short course for veterinarians. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., April 12-15, 1954. M. W. Allam, dean.

Oklahoma Conference for Veterinarians. School of Veterinary Medicine, Stillwater, Okla., May 3-4, 1954. W. M. Rice, Department of Medicine and Surgery, chairman.

American Animal Hospital Association. Annual meeting. Hotel Statler, New York, N. Y., May 5-8, 1954. Wayne H. Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

American Veterinary Medical Association. Annual meeting. The Olympic Hotel, Seattle, Wash., Aug. 23-26, 1954. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

New York State Veterinary Medical Society. Annual meeting. Saranac Inn, Saranac, N. Y., Sept. 15-17, 1954. Joan S. Halat, Utica, N. Y., acting executive secretary.

Foreign Meetings

Second Pan American Congress of Veterinary Medicine. Sao Paulo, Brazil, April 3-10, 1954. Dr. Joao Soares Veiga, chairman; Dr. Virginia Buff D'Apice, secretary general, P.O. Box 7064, Sao Paulo, Brazil.

British Caribbean Veterinary Association. Port-of-Spain, Trinidad, B.W.I., May 24-27, 1954. Dr. Stephen B. Bennett, c/o Department of Agriculture, St. Clair, Port-of-Spain, Trinidad, chairman, Organizing Committee.



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No. 923

The Comparative Value of Neomycin Sulfate and Crystalline Penicillin G for the Treatment of Chronic Streptococcic Mastitis of Cattle

JOSEPH SIMON, D.V.M., Ph.D.; TIHOMIR RADIVOJEVIC, D.V.M.; PHILIP REESE

Madison, Wisconsin

SOME OF THE biochemical properties and the broad spectrum of activity of neomycin, an antibiotic which was obtained from *Streptomyces fradiae*, were described by Waksman and Lechevalier¹ in 1949.

Waksman *et al.*² in 1949 investigated the *in vivo* therapeutic effect and toxicity of crude preparations of neomycin. The latter study further established the broad spectrum of activity of neomycin.

Drury³ in 1952 evaluated neomycin sulfate in the treatment of 405 cases of bovine mastitis and indicated that the antibiotic was effective against infections caused by streptococci, staphylococci, coliform organisms, pseudomonas infections, and a yeast.

The present study was undertaken in an effort to evaluate more critically the therapeutic effectiveness of neomycin in mastitis caused by *Streptococcus agalactiae*.

MATERIALS AND METHODS

The 11 experimental herds used for the field trials were located in the immediate area of Madison, Wis. The procedures used to diagnose an infection caused by *S. agalactiae* and the criteria which were established as a basis for recovery are the same as described by Simon *et al.*⁴ The quarters which were treated were selected by random.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station as paper NS.....
From the Department of Veterinary Science, University of Wisconsin. Mr. Reese is a member of the Madison Milk Producers Association.

This work was supported in part by a grant of funds from Grasselli Chemicals Department, E. I. DuPont de Nemours Company, Wilmington, Dela.

The neomycin in the form of teatube neomycin and the crystalline neomycin sulfate was furnished through the courtesy of the Upjohn Company, Kalamazoo, Mich.

Experiment 1.—The quarters of group A received 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicil, water-in-oil type vehicle; group B quarters received 500 mg. of teatube neomycin sulfate.

The results of experiment 1 are shown in table 1.

TABLE 1—Results of Treatment with Penicillin G and Neomycin Sulfate (Experiment 1)

Group	Quarters treated		Quarters freed of infection	
	(No.)		(No.)	(%)
A	75		62	82.6
B	75		39	52.0

Quarters in group A were treated with crystalline penicillin G potassium salts; group B, with neomycin sulfate.

Statistical evaluation of experiment 1 indicates that 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicil was a more effective therapeutic agent for mastitis caused by *S. agalactiae* than was 3.5 Gm. of teatube neomycin containing 500 mg. of neomycin sulfate (*chi-square* = 16.03) (1 d.f.) or $P < 0.01$.*

Experiment 2.—The quarters of group A received 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicil; group B quarters received 500 mg. of teatube neomycin plus 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicil. Obviously, experiment 2 was designed to detect possible synergistic action between neomycin and penicillin as used against mastitis caused by *S. agalactiae*.

The results of experiment 2 are shown in table 2.

Statistical evaluation of experiment 2 indicates that there was no therapeutic difference between the medicaments used (*chi-square* = 0.23) (1 d.f.) or $P < 0.7$.

*d.f. = degree of freedom; P= probability.

Experiment 3.—The quarters of group A received 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicle; group B quarters received 500 mg. of crystalline neomycin sulfate in 10 ml. of penicle.

The results of experiment 3 are shown in table 3.

TABLE 2—Results of Treatment with Penicillin G and Neomycin Plus Penicillin G (Experiment 2)

Group	Quarters treated (No.)	Quarters freed of infection	
		(No.)	(%)
A	43	39	90.9
B	48	42	87.5

Quarters in group A were treated with penicillin G potassium salt; group B, with neomycin plus penicillin G potassium salt.

Statistical evaluation of experiment 3 suggests that 100,000 units of crystalline penicillin G potassium salt in 10 ml. of penicle was a more effective therapeutic agent for mastitis caused by *S. agalactiae* than 500 mg. of neomycin sulfate in 10 ml. of penicle (*chi-square* = 10.3) (1 d.f.) or $P < 0.01$.

TABLE 3—Results of Treatment with Penicillin G and Neomycin Sulfate (Experiment 3)

Group	Quarters treated (No.)	Quarters freed of infection	
		(No.)	(%)
A	31	30	96.7
B	31	20	64.5

Quarters in group A were treated with crystalline penicillin G potassium sulfate; group B, with neomycin sulfate.

DISCUSSION

Since in experiment 1 teatube neomycin, represented by neomycin sulfate in an ointment base, did not appear to be as effective therapeutically against mastitis caused by *S. agalactiae* as crystalline G penicillin potassium salt, it seemed desirable to evaluate neomycin sulfate in the water-in-oil vehicle, penicle. Experiment 3 made possible a clearer evaluation of the therapeutic efficacy of the two antibiotics since the vehicle was the same in both instances.

Although the number of quarters employed was somewhat fewer than in experiments 1 and 2, statistical evaluation of the results of experiment 3 suggest again that 500 mg. of neomycin sulfate in an oil-retention vehicle was not as effective therapeutically as 100,000 units of crystalline G penicillin potassium salt in the same vehicle for mastitis caused by *S. agalactiae*.

SUMMARY

1) Teatube neomycin, a preparation containing 500 mg. of neomycin sulfate in 3.5 Gm. of ointment, was inferior under the prevailing field conditions to 100,000 units

of crystalline penicillin G potassium salt solution in the treatment of mastitis caused by *Streptococcus agalactiae*.

2) A synergistic activity *in vivo* between neomycin sulfate and penicillin was not demonstrable when this antibiotic combination was used as a therapeutic agent against mastitis caused by *S. agalactiae*.

3) Neomycin sulfate in penicle, a water-in-oil type vehicle, was not as effective therapeutically as 100,000 units of crystalline penicillin G potassium salt in the same vehicle.

4) These experiments did not confirm the previously reported³ high effectiveness of neomycin therapy for mastitis caused by *S. agalactiae*.

References

- ¹Waksman, S. A., and Lechevalier, H. A.: Neomycin, A New Antibiotic Active Against Streptomycin-Resistant Bacteria, Including Tuberculosis Organisms. *Science*, 109, (1949): 305-307.
- ²Waksman, S. A., Frankel, J., and Graessle, O.: The *in Vivo* Activity of Neomycin. *J. Bact.*, 58, (1949): 229-238.
- ³Drury, A. R.: Evaluation of Neomycin in Treatment of Bovine Mastitis. *Vet. Med.*, 47, (1952): 407-411.
- ⁴Simon, J., and Schmidt, E. G.: The Therapeutic Efficiency of Furacin and Furacin-Penicillin Mixture for Mastitis Caused by *Streptococcus Agalactiae*. *J.A.V.M.A.*, 121, (1952): 467-468.

Penicillin Anaphylaxis in Man

Nine cases of anaphylactic reactions following the administration of penicillin are reported, 5 of them fatal. Presumably, many others are unreported. It seems to occur most frequently in persons who have other allergies and also have been given penicillin repeatedly. Mild reactions produce urticaria and asthma. Severe reactions appear within a few seconds to several minutes, with evidence of shock, labored breathing, cyanosis, convulsions, and often death within a few minutes or hours.—*J.Am.M.A.*, May 9, 1953.

Stability of Aqueous Penicillin

Vials of penicillin powder (300,000 units procaine penicillin G and 100,000 units buffered crystalline penicillin G) maintained excellent stability at temperatures of 130 F. for twelve to eighteen months and at 80 F. for two to four years. When dissolved, they were stable for one to two weeks at 40 to 50 F.—*J. Am. M. A.*, Oct. 17, 1953.

Cyanogenetic Compounds in Plants and Their Significance in Animal Industry

(An Abstract)

EDWARD A. MORAN, B.S.

Washington, D. C.

Several hundred species of plants have been found to contain cyanogen. They are popularly called hydrocyanic acid (HCN) plants and are potentially dangerous to herbivorous animals. Most HCN-bearing plants belong to two families, the legumes and the grasses. A great number of other plants contain HCN, but they cause surprisingly few stock losses. The most dangerous common plants are the sorghums, which include Sudan grass and Johnson grass, and the foliage of the stone fruit trees: chokecherries, other wild cherries, cultivated cherries, plums, and peaches. Others that may be added to the list include arrow grass in recently dried swamp areas, a weedy chenopod called poison suckleya, and occasionally lima beans and flax. HCN has also been produced by ferns, fungi, and bacteria, and perhaps by an alga. Why these plants produce more HCN at some times than at others is not fully understood, but as a general rule they are more dangerous in times of drought or unfavorable growth conditions. Soil high in nitrogen usually favors HCN-formation in cyanogenetic plants.

Several simple tests can be used as indicators of HCN in plants. One of practical value is performed by placing a small quantity of the chopped, suspected plant in a test tube, adding a few drops of chloroform, then testing the vapor with a strip of sodium picrate paper attached to the inside tip of the cork. For best results, the test tube should be incubated at room temperature, or carried in an inside pocket, for several hours. A dangerous quantity of HCN will turn the yellow picrate paper red in a few minutes. Other chemicals may also turn the paper red, so this is not an infallible test.

All animals, including man, may be poisoned by HCN, but ruminants are more susceptible than are animals with a simple

stomach. Glucosides are not poisonous, but enzymes in the same plant can liberate the HCN they contain. Rumen microorganisms are also capable of hydrolyzing cyanogenetic glucosides and liberating HCN without the aid of an enzyme. The cyanide gas is then readily absorbed from the rumen. It is believed that if cyanide poisoning does not produce death within a few hours, recovery without chronic injury will occur. However, chronic poisoning may be associated with general cachexia. Recovered animals manifest no increased susceptibility; on the contrary, some indicate a certain degree of tolerance.

Lethal doses of HCN gas or its pure salt can be determined; whether poisoning occurs, depends upon the rapidity with which the plant is consumed and the rate at which the HCN is liberated from the glucoside. Any plant containing less than 20 mg. of HCN per 100 Gm. of plant is not considered dangerous, even if eaten in large quantities, because of the slow absorption. The m.l.d. of HCN given as a soluble salt in one drench is only slightly over 2 mg. per kilogram of body weight, yet the daily HCN tolerance of grazing animals would vary between 15 and 50 mg. per kilogram for a 24-hour grazing period.

The most successful therapeutic agents are those that combine with HCN to form harmless compounds. The treatment advised by Bunyea¹ is one of the most practical of any of those tested during the past eighteen years. It is a combination of sodium nitrite and sodium thiosulfate given parenterally which, for the most part, binds HCN into stable compounds. In that remedy, sodium nitrite eventually forms cyanmethemoglobin and the sodium thiosulfate forms sodium thiocyanate, which are relatively non-toxic. However, because of the rapid action of HCN, treatment must be prompt.

Livestock poisoned by HCN show signs of suffocation, increased respiration and pulse rate, followed by hypersensitivity, spasmodic movements, convulsions, and dyspnea. Hydrocyanic acid poisoning produces no characteristic gross or microscopic lesion. If examined soon enough after death, the stomach contents may have a characteristic benzaldehyde odor. Dark muscular tissue, congestion or hemorrhage of the lungs, petechiation of the tracheal mucosa,

¹From the Pathological Division, Bureau of Animal Industry, Washington, D. C.

The original article appeared in the American Journal of Veterinary Research, 15, (Jan., 1954):171-176.

¹Bunyea, Hubert: Treatments for Cyanide Poisoning of Sheep and Cattle. J.A.V.M.A., 86, (1935):656-661.

and a frothy bloody discharge from the mouth and nostrils are indications of HCN poisoning. Hematogenous pigment in various places suggests degeneration and destruction of many blood corpuscles.

Brucellosis in Man Due to Strain 19

Two cases of infection with *Brucella abortus*, strain 19, incurred by veterinarians while vaccinating calves, are reported (*J. Am. M. A.*, Nov. 28, 1953). The first case occurred in 1950 when, in picking up a syringe, the needle accidentally entered the palm of the hand. In six hours the hand was swollen and painful and chlortetracycline (aureomycin) in 250-mg. doses every four hours was given. The doctor was hospitalized the next day with chills, aches, temperature 102 F., lymphangitis of the forearm, and enlarged tender axillary nodes. He had suffered a similar accident with strain 19 vaccine about eighteen months before, and for several months had developed a skin rash especially on his arms when coming in contact with blood of an infected cow. Chlortetracycline was continued in 500-mg. doses four times daily for twenty-one days. Hot packs were applied to the hand. On the third day he was much improved and left the hospital on the ninth day quite normal except for one swollen, stiff finger. Blood cultures remained sterile but none were taken before treatment started. His agglutinin titer was 1:160, the same as in 1949 following his first accident.

The second case differed in that the individual was not sensitive and was negative to an agglutination test shortly before accidental infection in March, 1953. Illness did not occur until eight days after the vaccine accidentally splashed into both eyes while vaccinating.

The first symptoms were frontal headache, muscular pain, chills, and fever. When hospitalized on the eleventh day he was weak, had pain over the lumbar area, was restless and anorexic with a temperature of 103 F., but his eyes were normal. His spleen was enlarged, tender, and could be palpated below the left costal margin. *Brucella abortus*, strain 19, was isolated from a blood culture, his agglutinin titer was 1:320, and he had a mild, localized reaction to a skin test. Because of his serious illness, he was given 0.5 Gm. of dihydrostreptomycin

intramuscularly twice daily and 0.5 Gm. of chlortetracycline orally four times a day. After twenty-four hours, his temperature which had risen to 105 F. had dropped to normal and within seventy-two hours he felt much better. His appetite returned the fourth day and, after seven days, the dihydrostreptomycin was discontinued but the chlortetracycline was continued for twenty-one days. On the ninth day his agglutinin titer was 1:2,560 but blood cultures remained sterile. He left the hospital the eleventh day and made a complete recovery, his titer dropping to 1:1,280 after one month and to 1:320 after two months. The blood culture, verified as strain 19 by two other authorities, was the first ever recovered from a human case although a similar clinically diagnosed case had been reported by the *Cornell Veterinarian* in July, 1944.

Whereas illness in the first case was partly due to hypersensitivity, in the second case it was probably due to an endotoxin liberated by strain 19, similar to that found in virulent strains of *Br. abortus*. This suggests that, given the proper hosts, strain 19 apparently can also reproduce illness.

Histoplasmosis in Man in Britain

Two fatal cases of *Histoplasma capsulatum* infection in man have occurred in Great Britain. Each had been in military service in Africa, three and six years, respectively, prior to symptoms. Only 3 other positive cases have been reported in Britain, all of whom had resided in America or Africa.—*Brit. M. J.*, Nov. 14, 1953.

Psittacosis in Man

Recently 5 human cases of psittacosis were reported in Iowa, 1 in California, and 1 in Connecticut. The Iowa cases were traced to parakeets purchased in the same city. Two of the patients were a man and wife in the parakeet-breeding business.—*U.S. Dept. of Health, Education, and Welfare*, May 7, 1953.

Of persons handling antibiotics, 1 to 5 per cent become sensitized. The frequency of skin lesions on the hands, arms, and face, and of conjunctivitis, indicates that local contact is an important factor.—*Vet. Bull.*, Nov., 1953.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

A Bovine Diaphragmatic Hernia with Extensive Involvement of the Thorax

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DIAPHRAGMATIC hernia in the ox is occasionally diagnosed in veterinary practice. The condition is usually found on post-mortem examination but may be diagnosed during an exploratory laparotomy or rumenotomy.

Review of Literature.—A review of medical literature reveals that diaphragmatic hernia is placed in two categories by physicians:¹⁰ (1) traumatic and (2) nontraumatic. Traumatic hernias of the diaphragm have been noted in paratroopers, men wounded by missiles, and in persons that have fallen or suffered crushing injuries.¹¹ Nontraumatic hernias of the diaphragm in man are classified under a system based on the area of the diaphragm involved.¹⁰ In dogs or cats, most cases of diaphragmatic hernia are due to trauma.⁹

Roberts⁸ reported 5 cases of bovine diaphragmatic hernia in which the reticulum had prolapsed through the diaphragm and passed to the right. Tubbs¹¹ reported 2 cases of bovine diaphragmatic hernia in which the left side of the diaphragm was involved. A survey of the findings in the limited number of cases of diaphragmatic hernia reported to date indicates that the reticulum is the structure that prolapses through the diaphragm; it usually passes to the right of the midline and, as a result, a dullness is present when the right thoracic area is percussed or examined with a stethoscope. The heart may be pushed to the left and compressed to the extent that its transverse diameter is reduced in size when compared to the measurements of an average bovine heart. Other symptoms are depression, diarrhea, drop in milk production, anorexia, and vomiting. The symptoms will vary depending upon the size of the hernia and the organs involved.

In man² and dog,⁹ hernias of the diaphragm occur more often to the left of the midline. In the horse,¹² they have been found involving diaphragmatic areas on either side of the median plane. Nontraumatic diaphragmatic hernias in man are considered congenital.^{2, 4, 5, 10, 13}

Drs. Diesem and Mauger are members of the Department of Veterinary Anatomy at the Ohio State University; Dr. Tharp is the director of clinics.

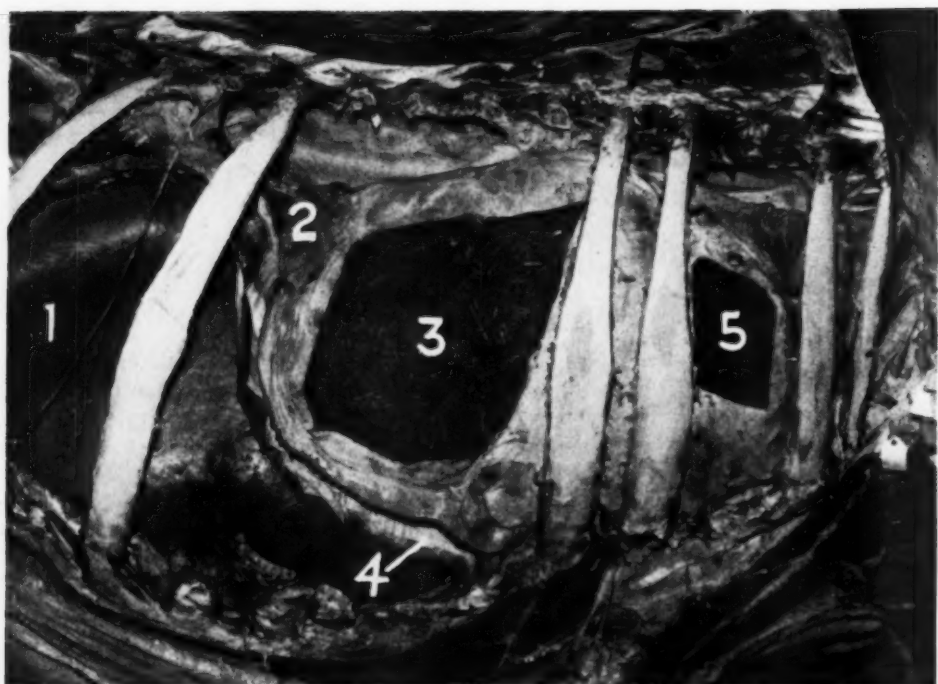
The authors acknowledge the aid of the Department of Photography and Mr. Thomas Crane of the teaching aids laboratory at Ohio State University for their assistance in preparing the pictures in this article.

Case History.—A registered Holstein-Friesian was sent to the veterinary clinic of the Ohio State University as a possible case of traumatic reticulitis. When purchased two years before, as a 5-year-old, she was pregnant and had produced a calf each year, the last just a few weeks prior



—Department of Photography, O.S.U.

Fig. 1—Posterolateral view of reticulum with bulk of rumen removed: (1) esophagus, (2) rumenoreticular fold, (3) reticular groove, (4) reticulum (arrow points to prolapsed areas), (5) heart, (6) ventral sac of rumen.



—Department of Photography, O.S.U.
 Fig. 2—Right view of thorax with windows in the diverticulum of the reticulum: (1) liver (normal position), (2) normal lung tissue, (3) ingesta, (4) diaphragm, (5) anterior extent of ingesta.

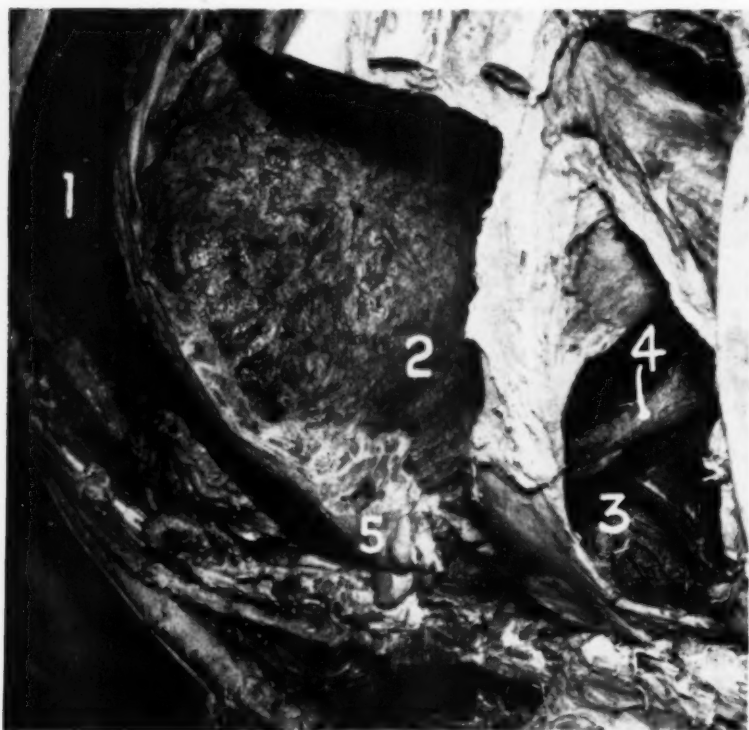


Fig. 3—Anterodorsal view of hernial opening with ingesta removed: (1) liver, (2) pouch wall, (3) point of communication between portions of reticulum, (4) apparent pillar containing bronchi and blood vessels, (5) diaphragm.

—Department of Photography, O.S.U.

to entering the clinic. The owner had occasionally noticed symptoms such as anorexia and slight diarrhea, or an occasional cough. However, the animal would again appear normal without having been treated. It was only during the previous thirty days that she had exhibited a great loss of weight, depression, loss of milk production, and a frequent cough. She did not vomit at any time. Vomiting in other species may be present or absent depending upon whether the hernia involves the esophageal hiatus of the diaphragm.¹⁵

Clinical Examination.—Examination revealed dullness over the right side of the thorax. Coughing was observed but could not be induced by manual manipulation of the larynx or by pressing on the thorax. After examination, an exploratory lapa-

rotomy and rumenotomy was performed, revealing a diaphragmatic hernia.

The surgeon palpated the prolapse and stated in his report, "the hernia is irreducible; the margin of the ring is 3 inches in diameter and to the right of the midline, about $\frac{3}{4}$ inch dorsal to the xiphoid cartilage. The ring was located on a transverse plane at the level of the fifth rib." The owner was advised of these findings and consented to the sale of the animal to the anatomy department as a dissection animal.

Gross Anatomical Findings.—The digestive tract was normal except for the slight reduction in size of the omasum. Rumen and omasum sizes vary in this condition; in one case the rumen or omasum may be enlarged, in another case decreased, depending upon the extent of the involvement of the alimentary tract.⁹

Approximately one half of the reticulum was anterior to the diaphragm and located in the lower portion of the thoracic cavity to the right of the midline. A thick-walled diverticulum, containing ingesta, extended



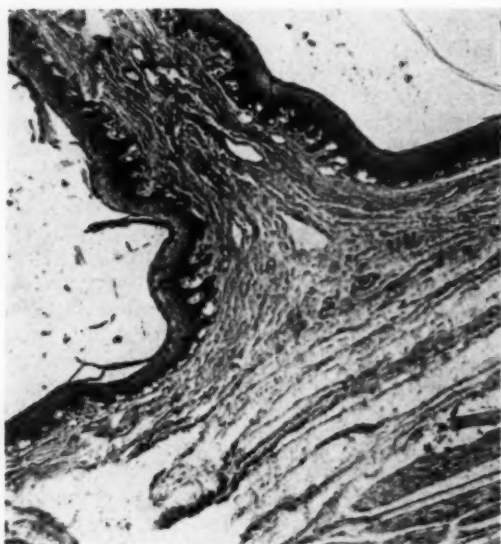
—Department of Photography, O.S.U.

Fig. 4—Front view of the heart laterally compressed by herniated viscera. The heart was pushed to the left of the median plane.



—Department of Photography, O.S.U.

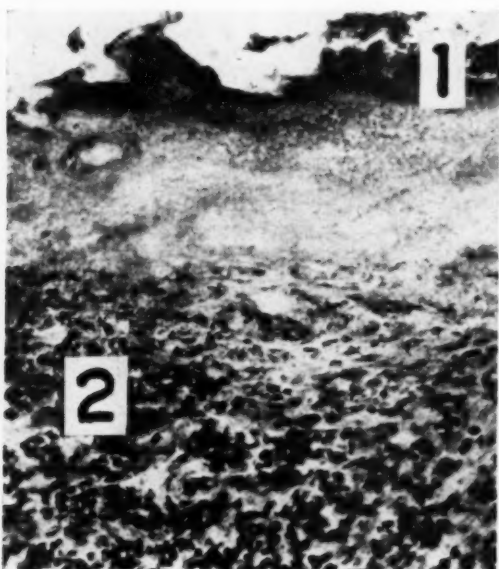
Fig. 5—Section showing intimate fusion of lung tissue with diverticulum wall: (1) wall of diverticulum, (2) normal lung. x 100.



—Department of Photography, O.S.U.

Fig. 6—Section of a portion of the reticular mucous membrane found anterior to diaphragm. The mucosa was normal. x 50.

dorsally from the prolapsed portion of the reticulum. It occupied approximately three-fourths of the right thoracic cavity (fig. 2) and had fused with the remnant of the right lung (fig. 5). Some apparently normal lung tissue was found on the dorsomedial



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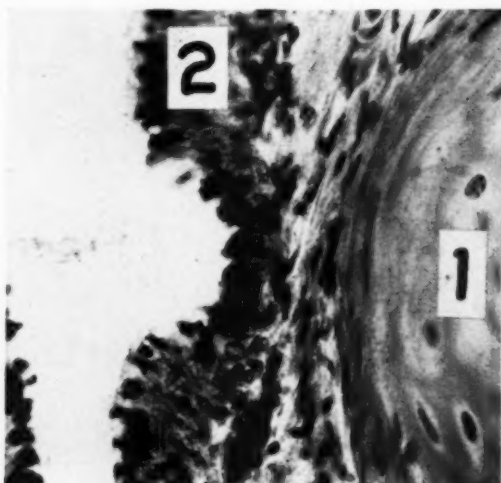
Fig. 7—Section of diverticulum wall: (1) note absence of epithelium, (2) infiltration of lymphocytes. x 475.

wall of the pouch and some on the lateral wall. The posterodorsal portion of the diaphragmatic lobe and the apical lobe were intact but intimately fused to the diverticulum. It is not difficult to see why dullness was noted on auscultation or percussion of the thorax. The heart was pushed to the left and its transverse diameter was greatly reduced (fig. 4).

The blood supply to the prolapsed structures was well developed, the reticular branch of the coeliac artery continuing through the opening in the diaphragm and supplying the prolapsed portion. The internal thoracic arteries supplied branches from the floor of the thorax, and small branches of the bronchial arteries supplied the dorsal portion where it was adhered to the lung.

The pillar-like structure found in the pouch (fig. 3) was probably a vestigial remnant of the bronchus to the cardiac lobe of the right lung. This structure contained small bronchi and connected normal-appearing lung tissue on the lateral and medial walls of this diverticulum.

Histological Findings.—Histological examination revealed that there was normal lung tissue remaining in the right thoracic area (fig. 5). The prolapsed reticulum exhibited normal histological structure (fig. 6). The diverticulum of the reticulum did not show an epithelial lining, its wall being made up of a heavy layer of keratinized tissue, with the adjacent connective tissue



—Department of Photography, O.S.U.

Fig. 8—Cross section of apparent pillar in figure 3: (1) cartilage, (2) epithelium around bronchiole. x 475.

showing a heavy infiltration of lymphocytes (fig. 7). The apparent pillar in figure 3 revealed, when sectioned, a number of bronchioles surrounded by cartilage tissue, with the lumen of the bronchioles lined with a respiratory-type of epithelium (fig. 8).

Discussion and Summary.—The literature on diaphragmatic hernia as it occurs in the human, equine, canine, feline, and bovine species has been reviewed. The location of the hernia determines to a degree the type of symptoms seen on clinical examination.

In the case reported, many of the usual symptoms of diaphragmatic hernia were observed. The extent of the hernia and the absence of distinct signs of respiratory or digestive disturbances associated with it is unusual. Definite clinical symptoms did not appear until a month prior to death. That this process was of long standing is indicated by the absence of a great amount of lung tissue and the well-developed blood supply to the abnormal structures in the right thorax.

It was believed that ingesta was constantly changing in all parts of the diverticulum. The communication of the herniated with the abdominal portion of the reticulum was patent and approximately 3 inches in diameter. The ingesta removed from the thoracic area was of the same consistency as that found in the rumen and that portion of the reticulum posterior to the diaphragm.

One can only speculate as to whether this condition had a congenital origin, facts were not sufficient to warrant definite conclusions.

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Factors Affecting Turkey Fertility

Low fertility in turkey flocks is a serious problem. It may be affected by the frequency of mating which is determined by the female or by the completeness of mating as determined by the male. The incidence of broodiness, number of eggs laid, or environmental temperature apparently had little influence on fertility. Toms were released for thirty minutes daily from Jan. 29 to June 8, 1952. Matings per female range from three to 47; the percentage completed by toms, from 44 to 87 per cent. Little can be done to effect frequency, but efficient males could be selected by trials before the breeding season opened.—*Poult. Sci., Nov., 1953.*

Freemartins Among Twin Ewes

Veterinarians at the University of California, while studying erythrocyte mosaicism in twin sheep, an indication of blood vessel fusion between twin embryos, found that 1 such ewe was a freemartin. Three other cases have been reported. A study of the literature indicates that placental anastomosis may occur in 5 per cent of twin lambs and, with twins so common, 1 of every 120 ewes could be a freemartin.—*Science, Dec. 4, 1953.*

Eperythrozoonosis Transmitted in Utero from Carrier Sows to Their Pigs

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HEAVY DEATH losses were encountered in February and March of 1953 in a single herd of pigs at a very early age and were believed to be caused by the transmission of *Eperythrozoon in utero* from carrier dams. Such transmission has not been encountered before and to the best of our knowledge has not been previously reported in the literature.

HISTORY

The following is a brief history of the case. During September, 1952, a herd of purebred Chester White brood sows experienced an outbreak of hog cholera and chronic swine erysipelas. The herd at that time consisted of 25 brood sows, 190 small pigs (1 to 3 weeks of age), 140 shoats (90 to 140 lb.) and 1 herd boar. No animals had been added to the herd in years except breeding boars and none in the herd had been immunized against cholera prior to the outbreak.

When symptoms abated, the herd consisted of 5 brood sows, 90 pigs, 60 shoats, and the herd boar. Of these, 5 sows and 12 of the best gilts were retained for fall breeding.

Beginning in early February, 1953, and ending in about six weeks, the 17 sows and gilts farrowed a total of 90 pigs. All but 17, an average of 1 pig per sow, died before 1 week of age. In spite of individual therapeutic doses of iron to both sows and pigs, clinical symptoms exhibited by the pigs were severe anemia and weakness, followed by death. In most pigs, death occurred at 24 to 48 hours of age with a few living as long as a week. Their temperatures remained normal throughout the course of the disease.

Postmortem lesions were those of severe anemia and fatty changes in the livers and kidneys. Cultures taken at autopsy from 3 typical pig cases were negative. Hematology on 1 of these pigs before death revealed the following:

Erythrocytes	3,190,000 per cmm.
Leukocytes	12,000 per cmm.
Hemoglobin	9.0 Gm/100 cc.

Journal series No. 1368, Missouri Agricultural Experiment Station.

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The authors gratefully acknowledge the autopsy reports from Dr. L. D. Kintner, assistant professor of veterinary pathology, contributed to this article; and the help given by Dr. Cecil Elder, head of the Department of Veterinary Pathology, in preparing and writing this article.

Differential w.b.c.	%
Juveniles	12
Stabs	37
Segmenters	15
Lymphocytes	34
Monocytes	2
Eosinophils	0
Totals	100

64% Neutrophils

Stained blood films revealed a Schilling "regenerative shift to the left," having too many young forms of neutrophils. The outstanding findings were those in the erythrocytes which revealed much erythrocytogenesis with large numbers of normoblasts and polychromes. Erythrophochromia, anisocytosis, and poikilocytosis were also observed. Many eperythrozoa were present on the erythrocytes.

DISCUSSION

Eperythrozoa are considered to be blood protozoan parasites. In the Bovidae, *Anaplasma marginale* and *Anaplasma centrale* are also considered to be blood protozoan parasites.

Stewart¹ reported a prenatal infection of *A. centrale* in a calf. Following its death, which occurred a few hours after birth, *A. centrale* were demonstrated microscopically in stained blood films. Splitter² has seen prenatal bovine *A. marginale* infection under controlled experimental conditions.

An electron microscopic study of bovine anaplasmosis by De Robertis and Epstein³ indicates that many of the parasites are definitely submicroscopic. Parasites revealed by the conventional microscope, when demonstrated, appear as single masses. Electron magnification of 11,000 x to 11,500 x revealed these bodies to be generally constituted of a central undivided mass of high electron density and rounded peripheral bodies from 170 to 220 m μ in diameter. In some cases, the entire parasitic mass appeared to be constituted of tightly packed elementary bodies, while in other instances the latter were dispersed throughout the erythrocyte, making them invisible through the conventional microscope. The presence of these smaller units of the parasites may explain the phase of the disease syndrome of infective blood

from recovered animals at a time when marginal bodies are at a very low concentration or cannot be ascertained definitely.³

Splitter² has reproduced clinical symptoms of eperythrozoonosis in splenectomized baby pigs as young as 7 days. In experimental work, he and co-workers occasionally observed a few eperythrozoon (in *E. suis* infections) on the second day after intravenous injections of carrier blood, but the parasites were rare in the blood. He states that relatively heavy infections can be developed in less than twenty-four hours, but these require intravenous injections of blood, in large amounts, containing enormous numbers of the parasites.

The finest Berkefeld and Mandler filters (pores 3 to 4 μ) retain bacteria and some viruses. The Anaplasma elementary bodies in the electron microscopic study were measured at 170 to 220 $m\mu$ in diameter.³ Many human viruses are larger than this, i.e., variola (smallpox) $200 \pm m\mu$, vaccinia (cowpox) $236 \pm$, varicella (chickenpox) 210 to 250, rubella (German measles) less than 800, molluscum contagiosum, 200 x 300, herpes zoster (shingles) 210 to 250, and epidemic parotitis (mumps) $179 \pm m\mu$.

Foote, Brock, and Gallaher⁴ passed Eperythrozoon-infective blood through 12-lb. Mandel bacteriological filters. They observed that eperythrozoon were present in some blood films but not from all clinical or experimental cases of what they called "virus anemia." They reported that splenectomized and normal pigs which recovered from their "virus anemia" remain carriers of the "virus" for an indefinite time. Their observations of leukocyte counts were that, in clinical cases, the leukocytes remained normal throughout the course of the disease, but in a few individuals this varied from slightly below to slightly above normal.⁴

Coffin⁵ states that leukopenia is seen in most uncomplicated virus diseases. Leukopenia is an abnormal reduction of white cells in the circulating blood and may involve one or all of the white cell elements.

Hematology on the entity, previously mentioned in this paper, though limited in extent, revealed severe anemia with a total leukocyte count in the upper range of normal. This was caused by an increase, to 49 per cent, of the immature neutrophils. This increase of young forms would not be expected in an uncomplicated virus disease.

Berrier⁶ has hematology reports on 3 baby pigs from another herd previously suspected of prenatal eperythrozoonosis. This case was complicated by several types of pathogenic bacteria which were recovered on culture mediums from cadavers. Their hematology revealed from 3 to 6 million erythrocytes; hemoglobin 8.2 to 9.4 Gm./100 cc.; 12,500 to 22,700 leukocytes of which 32 to 46 per cent were immature neutrophils. Stained blood films revealed large numbers of eperythrozoon and other typical hematological findings. In this herd, death losses were heaviest from 24 hours to 4 days of age.

In a recent authoritative classification,⁶ the genus, Eperythrozoon, has been placed with other closely related blood parasites in the group of organisms intermediate between the bacteria and viruses (order Rickettsiales, family Bartonellaceae). Numerous organisms in the order Rickettsiales may be passed through the usual bacteriological filters and, although many have not been cultured on cell-free mediums, it is generally agreed that these structures are probably viable microorganisms. The rickettsial organisms are included in this order and are divided into two groups according to their passage or retention by filters.⁶

Splitter⁷ states that the passage of blood serum through bacteria-tight filters at a negative pressure of 100 mm. of mercury or less usually removes the pathogenic agent. If passage of *Eperythrozoon suis* does occur, typical acute eperythrozoonosis results. He also observed that the disease may be halted immediately in the early stages by therapy with neoarsphenamine. It was observed in his studies that the presence or absence of eperythrozoon, microscopically, in blood of the donor animal is an important criterion of the infectivity of the serum and the Eperythrozoon species that may be present. Similarities between the two Eperythrozoon genera include the morphology and staining reaction, parasitic relation to the erythrocyte, the disease process and pathology, the activation of latent infections as well as removal of natural immunity by splenectomy, and the susceptibility to neoarsphenamine.⁷

SUMMARY AND CONCLUSIONS

A case has been encountered which is believed to be uncomplicated transmission

of Eperythrozoon *in utero* from a herd of carrier sows to their pigs, causing heavy death losses from 24 to 48 hours of age.

Hematology findings were not those expected in bacterial or virus diseases, but were typical of other infectious diseases causing severe anemia. Eperythrozoon were present in relatively large numbers on the erythrocytes, though no effort was made for their classification.

As far as could be determined by searching the literature on Eperythrozoon infections and through personal communication,² it is believed that this is the first observation of an *in utero* transmission of eperythrozoonosis in swine. It is possible that electron microscopic studies of this disease would reveal many things not yet understood.

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A Persistent Milking Goat.—The Dairy Goat Journal quotes Dr. Charles Rager (IND '96) of San Antonio, Texas, as having a doe which has given over a gallon of milk per day for three years without breeding.

Sows which attack or devour their newborn pigs almost invariably respond to an enema of 2 to 3 drams of chloral hydrate in $\frac{1}{2}$ pint of water at body temperature.—Vet. Rec., Sept. 19, 1953.

Hypergenetic Teratism in a Dog

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The body of a 9-week-old mongrel puppy was submitted to the Department of Anatomy (University of Pennsylvania) with a request for a report on the dissection findings. Dissection revealed such an interesting type of anomalous development that it was thought wise to record the observations. A search of the literature did not reveal any reports of similar cases.

Externally, the specimen possessed two anal orifices and two vulvar openings. The tail was displaced sinistrally over the left anus.

In describing the dissection findings, reference will be made to figure 1 and the numbers in parentheses will refer to the numbers labelling the parts on this figure. Figure 2 is a photograph of the caudal portion of the specimen from which figure 1 was drawn.

Digestive System.—Figure 1 shows the

From the Department of Anatomy, School of Veterinary Medicine, University of Pennsylvania, Philadelphia.

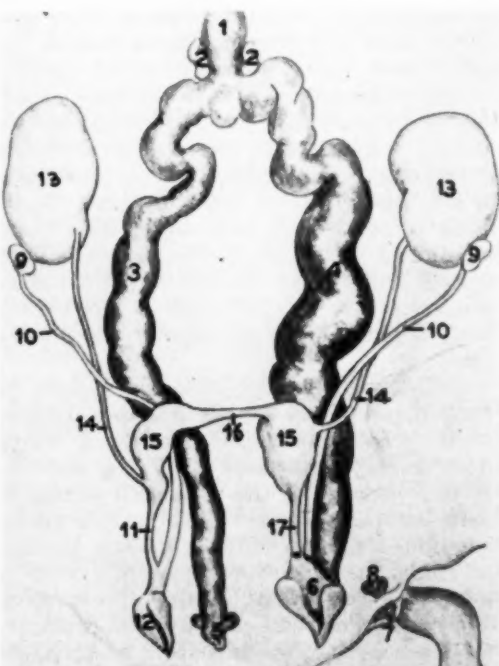


Fig. 1—Diagram of anomalous development found in specimen pictured in figure 2. (Refer to text for description of labels.)

digestive system which was normal to the terminal end of the ileum (1), where two small cecums (2) were present. Caudally, the bowel divided into two colons (3 and 4), each supported by separate mesenteries.

The right colon (3) was normal in size and continued caudally as a rectum which terminated at a separate anal orifice (5). Normal anal sacs were associated with the right anus.

The left colon (4) opened into a cloaca (6) through an opening 6 mm. in diameter. The left anus (7) possessed two small openings leading into a blind pouch. On each side of this was an anal sac (8).

Genital System.—The right and left ovaries (9) were considered to be normal in size and position.

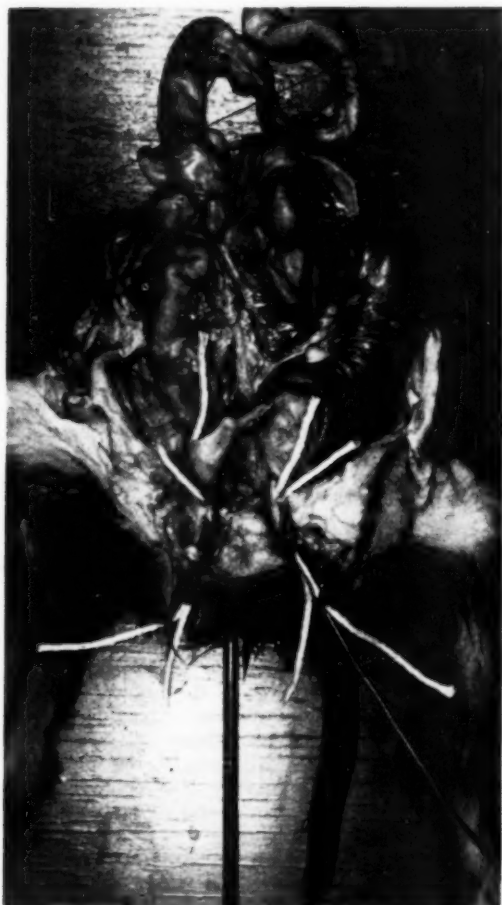


Fig. 2.—Photograph of the caudal portion of the specimen from which figure 1 was drawn. Comparison with figure 1 and reference to text will provide easy identification of parts. Strings are traversing right and left urethras and right and left vaginal tracts.

The right and left uterine cornua (10) were not fused caudally, so that no uterine body was present. Both passed caudally medial to the ureters and their diameters increased to form vaginal anlage. On the right side, this terminated by joining the urethra (11) to form a common duct emptying into a urogenital sinus (12). On the left side, the vagina terminated in the cloaca (6).

Urinary System.—Both kidneys (13) were normal in size and position. Right and left ureters (14) were attached in a normal manner to the kidneys. Caudally, the ureters emptied into right and left urinary bladders (15) which were connected by a pedicle (16) possessing a lumen. The right ureter attached to the right bladder near the neck, but the left ureter was attached to the fundus of the left bladder. The course and termination of the right (11) and left urethras (17) may be easily followed in figure 1.

Skeletal Alterations.—Radiographs of the specimen, followed by dissection, revealed that the centra (bodies) of the fifth, sixth, and seventh lumbar vertebrae were doubled. Dense fibrous tissue separated the two segments of each. Otherwise, these vertebrae were essentially normal, possessing neural arches which fused dorsally, and single spinous processes.

The sacrum was normally formed, but articulated with the seventh lumbar vertebra at an oblique angle, causing a deviation to the left.

The first coccygeal vertebrae articulated obliquely with the sacrum causing the leftward deviation of the tail. Otherwise, the coccygeal vertebrae were normal.

Summary.—The anomalous development displayed by this specimen may be summarized as follows:

- 1) There was duplication of the hind gut, producing two cecums, two colons, and two cloacae.
- 2) The right cloaca became differentiated into a dorsal rectum and a ventral urogenital sinus. Differentiation of the urogenital sinus was incomplete.
- 3) The left cloaca remained undifferentiated.
- 4) The müllerian ducts failed to converge and fuse caudally, accounting for the absence of a uterine body, cervix, and single vagina.

The Association of *Listeria Monocytogenes* with Abortion

Review of the Literature and Report of a Bovine Case

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GRAHAM, Hester, and Levine¹ were the first to report the isolation of *Listeria monocytogenes* from an aborted bovine fetus. Little mention is made in their report relative to herd history other than that the 7-month-old aborted fetus was from a brucellosis-free dairy herd.

REVIEW OF LITERATURE

Evans and Sawyer² reported the isolation of *L. monocytogenes* from a 4½-month-old bovine fetus. The herd, consisting of approximately 35 milking cows and a similar number of young stock, had been Brucella-negative for several years. There was a history of several abortions of undetermined cause and also a history of difficulty in getting heifers to settle, many of them reaching the age of 3 to 4 years before conceiving. There was no history of encephalitis ever having been evident in any member of the herd. The aborting animal, a 4-year-old Jersey in her first gestation period, had exhibited regular heat periods and was bred several times but did not conceive until service following the manual expression of a large ovarian cyst.

Ferguson, Bohl, and Ingalls³ reported the isolation of *L. monocytogenes* from 2 aborted bovine fetuses. The abortions occurred in different herds, neither of which had a history of encephalitis in any member. The first finding was from an approximately 5-month-old fetus aborted by a grade heifer in her first pregnancy. The history in this case revealed the possibility of an injury to the heifer a few weeks prior to abortion. The second finding was from a fetus approximately 7 months old which had been aborted by a Hereford heifer in February, 1950. This heifer was in a herd of 50 Hereford heifers which had been shipped to Ohio from Canada approximately three months prior to the time of abortion. An earlier abortion had occurred in this herd but no bacteriological examination had been made. The authors reported that prior to the time this herd had been placed on pasture 3 normal calves were born and six abortions occurred. Three of the aborted fetuses were examined bacteriologically; *L. monocytogenes* was recovered from 1, and 2 were reported as being bacteriologically negative. The cattle were in a poor state of nutrition and this was considered

a possible contributing factor in the occurrence of the abortions.

Poppensiek⁴ reported the isolation of an organism resembling *L. monocytogenes* from the liver and kidneys of an aborted ovine fetus. No history of listeriosis or central nervous system disorder had been reported in the flock. Thirteen days prior to the abortion, 29 young ewes and rams had been brought into the flock from another state. All were healthy at the time of importation and none subsequently showed clinical evidence of listeriosis. The aborting ewe showed no clinical signs of listeriosis either prior or subsequent to abortion. Thirty-six days after the ewe aborted, a 4-year-old Aberdeen Angus cow, in a herd sharing the same pasture with the sheep, showed central nervous system disorders. She was killed after becoming comatose. Cultures, histological examinations, and animal inoculations were made. On the basis of the results of these examinations, a diagnosis of listeriosis was made.

From abroad, a number of reports of the association of *L. monocytogenes* with abortions in animals have appeared. Paterson,⁵ in England, reported on an outbreak of ovine abortions in which half of 32 yearlings in a flock of 110 sheep aborted or gave birth to dead lambs. Four fetuses were examined bacteriologically. *Listeria monocytogenes* was recovered from the abomasal contents of 3, while a similar specimen from the fourth was bacteriologically sterile. No gross lesions were observed in any of the fetuses. Cervical swabs taken from 6 ewes which had most recently aborted were negative for *Listeria* on culture. Abortions occurred over a two-month period, and approximately one month following the last abortion, all 16 ewes that had aborted were slaughtered. Bacteriological examination of uteri from these ewes in no instance revealed the presence of *L. monocytogenes*.

Three pairs of pregnant ewes were injected intravenously with 2 cc. of a serum-broth culture of each of the three isolates of *L. monocytogenes*. These 6 ewes aborted between the seventh and twelfth day after inoculation. Aborted fetuses, with 1 exception, yielded pure cultures of *L. monocytogenes* from all parts of the body examined, including the central nervous system. One of each pair of ewes was killed immediately after aborting and the other ewe was killed twenty-one days following abortion. *Listeria* organisms were recovered from the uteri of the sheep killed immediately following abortion. Cultures made from the uteri of ewes killed twenty-one days after abortion failed without exception to reveal the presence of *L. monocytogenes*. Pregnant ewes dosed orally with serum-broth cultures of *L.*

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monocytogenes remained healthy and gave birth to normal, healthy, full-term offspring. Dams and offspring killed at a later date were found free of *Listeria* infection upon bacteriological examination.

Wramby⁶ recovered the organism from 3 aborted calves and from the fetal membranes of 2 cows that had aborted. Olson⁷ reported the recovery of *Listeria* and streptococci from placentas and aborted fetuses observed in the abortion laboratory of the State Veterinary Institute at Stockholm, Sweden. *Listeria monocytogenes* was recovered from a total of 7 cases, 6 bovine and 1 ovine. Cultures were obtained in two instances from the fetal abomasal contents, in three instances from specimens of fetal membranes, and in two instances from both the fetal membranes and the abomasal contents. With one exception, *L. monocytogenes* was recovered in pure culture from these specimens. In one instance, it was mixed with *Corynebacterium pyogenes*.

Grini⁸ was the first to report *L. monocytogenes* infection in the horse. The organism was recovered from the liver, spleen, and kidneys of a foal which died six days after birth. The foal had shown slight hemorrhage from the navel, and diarrhea before death. The only postmortem lesion observed was an enlarged liver containing numerous necrotic foci.

Burn⁹ reported the recovery of *L. monocytogenes* from 2 infants, neither of which survived more than thirty-six hours postpartum. One, born three weeks premature, died thirty-six hours after birth, and blood cultures were positive for *Listeria*. The second was a full-term infant which died twenty-four hours after birth. In this instance, vaginal swabs were taken from the mother eight days after parturition, but no organism resembling *L. monocytogenes* was apparent on culture. Pathology observed in both cases consisted of focal hepatic necrosis, focal pneumonia, and some hemorrhage into the ventricles of the brain.

Potel¹⁰ described a condition in aborted infants, and in infants a few days old, which he termed granulomatosis infantiseptica. Lesions were observed in the liver and macroscopically resembled miliary tubercles. However, microscopically they were found not to be of tuberculous origin. He further pointed out that a similar observation had been made by Handley in 1893 and that, until 1950, 24 such case reports had appeared in the world literature. This condition had been considered by some as a form of human pseudotuberculosis and by others as an infection with a pseudodiphtheria bacillus, since a gram-positive rod had been isolated in a number of instances. Reporting on over 20 cases, Potel described a small gram-positive rod which he considered to be identical with the organisms described in the earlier reports. Potel¹¹ listed the characteristics of this organism and named it *Corynebacterium infantisepticum*. Seeliger^{12, 13} had also observed conditions similar to those described by Potel and had isolated a bacterium therefrom and identified it as *L. monocytogenes*. The only difference in the or-

ganisms described by Potel and Seeliger was that *C. infantisepticum* was nonmotile while *L. monocytogenes* was motile. Seeliger¹² examined five strains of *C. infantisepticum* furnished by Potel and, by comparison with known strains of *L. monocytogenes*, all cultures proved to be identical culturally and biochemically. Motility was demonstrated in all cultures by both the semisolid and the hanging drop techniques.

REPORT OF A BOVINE CASE

The isolation reported herein was made from the abomasal contents of an aborted bovine fetus in approximately its seventh month of prenatal development. The dam was a 9-year-old Hereford-Durham cross and had delivered 6 normal, full-term calves prior to the seventh calf which was aborted and presented for bacteriological examination. No breeding difficulties had ever been evident in the dam and she was in estrus thirty-one days after aborting. Breeding in the herd had always been by natural service. The placenta was removed with relative ease approximately eighteen hours following abortion. The cotyledons were shriveled and of a pasty appearance. A slight discharge was evident for three days after abortion. There were 11 head of cattle in the herd and no sheep on the farm. No other abortions had occurred, no unexplained deaths were reported nor encephalitic symptoms observed in any of the cattle.

Stomach contents from the aborted fetus were examined in wet mount by means of the phase contrast microscope. This has become routine procedure in our laboratory and has proved very satisfactory, particularly as a means of rapid, tentative identification of organisms of the genus *Vibrio* in fetal fluids. The examination revealed a coccobacillary microorganism exhibiting a tumbling type of motility characteristic of that exhibited by *L. monocytogenes*. Stomach contents were streaked on tryptose agar containing 5 per cent bovine blood and were inoculated into Difco's thiol medium. Incubation was at 35 C., aerobically and under 10 per cent CO₂ tension. After twenty-four hours' incubation, many small, *alpha* hemolytic colonies could be observed on the blood agar and, with continued incubation at room temperature, the size of the colony increased and hemolysis became of the *beta* type. Gram-positive small rods were observed in stained preparations made from these colonies. Biochemically, the organism exhibited the following reactions:

acid was produced in twenty-four to forty-eight hours in dextrose, maltose, glycerol, levulose, salicin, and xylose; slow acid production was also observed in lactose, sucrose, and sorbitol, the latter showing evidence of acid production only after three weeks' incubation; mannitol, dulcitol, trehalose, raffinose, and inulin were not attacked; the organism was urea-, indo-, V. P.,* citrate-, nitrite-, H_2S -, and gelatin-negative, and was M. R.** and catalase-positive. It grew at 45 C. and in 6.5 per cent salt. Litmus milk showed evidence of slight acid production and a state of reduction that shifted from time to time. Motility was demonstrated in motility medium and also in wet mount employing the phase contrast microscope. With the exception of xylose fermentation, these characteristics are identical with those given for *L. monocytogenes* in Bergey's Manual.¹⁴ Merchant,¹⁵ however, indicated that some strains of *L. monocytogenes* may ferment xylose. Graham *et al.*¹⁶ reported on the fermentation reactions of 15 strains of *L. monocytogenes* and indicated that only one strain, which was of ovine origin, produced slight acid from xylose. All strains were sorbitol-negative after fourteen days' incubation.

A guinea pig inoculated intraperitoneally with 0.5 cc. of a 24-hour broth culture succumbed to this inoculation in four days. At autopsy, focal abscesses were observed in the liver and kidneys and *L. monocytogenes* was recovered in pure culture from these organs. A rabbit injected intravenously with 0.5 cc. of a similar culture died in twenty-four hours and at autopsy revealed liver degeneration and pneumonia. *Listeria monocytogenes* was recovered from the liver and lungs. Instillation into the conjunctival sacs of rabbits, using 2 drops of a 24-hour broth culture, in forty-eight to seventy-two hours produced a very mild conjunctivitis with relatively little exudate. Gray¹⁷ has observed this as not uncommon with freshly isolated cultures of *L. monocytogenes*, but after a few subcultures on an artificial medium, the ability to stimulate the production of a copious mucopurulent exudate was considerably enhanced.

DISCUSSION

Olson⁷ believed that *Listeria monocy-*

togenes may be present at so-called "normal" birth. He also considered infection with *Listeria*, resulting in abortion, not as unusual as one might surmise from the relatively small number of reports in the literature. Ferguson *et al.*³ indicated the possibility of the organism being an opportunist. This suggestion of conditional parasitism implies the harmless existence of *L. monocytogenes*, probably in the genitourinary tract, at certain times if not continuously. To the best of our knowledge, recovery of the organism from a supposedly normal reproductive tract, male or female, has never been reported. During the past few years, one of us (J.J.S.) has made bacteriological examinations of vaginal and cervical swabs from approximately 200 cows. In no instance has an organism suspected of being *L. monocytogenes* been obtained on culture. One of us (M.L.G.) made cultures from vaginal and cervical swabs, taken from cows in a herd where calves had died from septicemic listeriosis, and was unable to recover *L. monocytogenes* in any instance.

The association of *L. monocytogenes*, even with the relatively small number of cases of abortion reported in the literature, is indicative of the importance, and the advisability, of bacteriological examination of all aborted fetuses whenever possible. Only by such examination can the relative importance of each bacterial genus be evaluated in regard to its abortifacient potential.

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* V.P. = Voges-Proskaver test.

**M.R. = Methyl red test.

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Neomycin, an Adjunct in Veterinary Surgery

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Veterinary surgical procedures conducted under field conditions have often been referred to as "barnyard surgery." This certainly is a proper term for describing the type of surgery often performed by farmers and stockmen, which the veterinarian may be called upon to repair. One factor responsible for the damage done in so-called "barnyard surgery" is the infection resulting from altogether too septic a technique. While asepsis is impossible even for a veterinarian under usual field conditions, he can improve his results considerably by applying effective antibacterial agents when indicated. This is a review of experiences with neomycin sulfate as an adjunct in field surgery.

Neomycin is an antibiotic derived from the soil organism *Streptomyces fradiae*. It

was discovered by Waksman¹ and his co-workers in 1949. Studies on the spectra of organisms affected by neomycin reveal the substance to be bactericidal *in vitro*^{2,3} against a wide variety of gram-negative and gram-positive bacteria,³⁻⁸ including some that are streptomycin-resistant. Organisms do not readily develop resistance to neomycin, probably because there is only a slight difference between bacteriostatic and bactericidal concentrations of neomycin for a given organism.⁹ These findings and the many reports on the clinical efficacy of neomycin in both human¹ and veterinary medicine indicated that neomycin might be useful in veterinary surgery where mixed bacterial infections are commonly encountered.

A powdered form of neomycin, called mycipo,[®] containing 5 mg. of neomycin sulfate per gram in a lactose base was made available for clinical evaluation. It is supplied in a plastic, puffer-type bottle which greatly facilitates its use and eliminates waste. The powder will adhere to moist surfaces and is not irritating, even in the eye.¹⁰ While it is not a completely sterile preparation, this is not a disadvantage. The broad spectrum and rapid bactericidal action offset this factor.

Mycipo and a neomycin-sulfa-urea powder mixture were used experimentally in vaginal and abdominal surgery. Mycipo was used in 6 cases where injuries of the vagina during parturition had resulted in prolonged bacterial infection. It was applied lightly to and around the contaminated or infected area. It seemed to control the infection so that repair could begin within two or three days, which is considered a good response in these cases. In 1 case in which a vaginal tumor was removed, healing had been delayed by infection for approximately fourteen days; however, there was poor drainage in this instance. One case of bacterial vaginitis responded rapidly to three applications of mycipo and in all cases, three applications were sufficient to eliminate infection and promote rapid healing.

The powder was also used as a dressing after cesarean sections on 1 ewe, 1 bitch, 1 cow, and 25 sows. The powder used contained 5 mg. per gram of the sulfate when used alone, or was incorporated into a sulfa-

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[®]Supplied by the Upjohn Company, Kalamazoo, Mich.

urea powder at the rate of 1 Gm. per pound. In all cases, the powder was applied sparingly in the peritoneal cavity as well as on the incision. Only 1 of these animals was lost. We are of the opinion that neomycin was instrumental in keeping down bacterial growth and thus hastening recovery.

In the ewe, on which the cesarean section was performed, torsion and partial rupture of the uterus had occurred. The uterus was edematous and the peritoneal cavity contained about 150 cc. of clotted blood at the time of surgery. The powder was insufflated into the uterus and throughout the surrounding areas of the peritoneal cavity. We considered it unusual that this ewe did not develop peritonitis. In all of these cesarean sections, recovery was rapid and uneventful, with not a single repeat call required due to postsurgical complications.

In another instance, we were called to repair a "farmer's rumenotomy" in which a crude incision had been made with a butcher knife. Ten days later, when the case was referred to us, the wound was approximately 7 inches wide externally leaving a fistula in the rumen wall 5 inches in diameter. The rumen was adherent to the parietal peritoneum and all the tissues had thickened beyond recognition. The adhesions were broken down and the edges scarified. Interrupted sutures of heavy chromic gut were placed in an attempt to draw the edges of the rumen together. A fair approximation resulted in spite of interference of rumen contents and decayed tissues. The neomycin-sulfa-urea powder was applied liberally during suturing; then the client applied the neomycin powder externally daily for ten days, by which time recovery was complete.

Neomycin powder has been used alone in the treatment of extramammary abscesses of the bovine udder, and after five daily applications further medication was unnecessary. We have used teatube®-neomycin* in routine bovine mastitis but have not found it as beneficial as the powder in surgery. The powder was used in "pink-eye" of cattle with good results. It was considered superior to the other preparations used for this purpose. Lacerations of the skin have also been treated successfully.

Neomycin seems to be exceptionally effective in treating calf scours and baby nix enteritis. In these cases, kaopectate®* with

neomycin was used with the best results ever attained.

Summary.—Neomycin sulfate has been used extensively as an adjunct in veterinary surgical procedures and has been found to be exceptionally effective in controlling those infections which so often complicate surgery conducted in the field. It is our opinion that this antibiotic is more effective, in this use, than other products used in the past and has materially decreased mortalities.

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Heritability of Fertility in Cows

To attempt to increase herd fertility by selection on the basis of services required for conception, or on the length of the interval between calving, would not be practical. Greater reproduction efficiency should be more easily achieved by improved nutritional, pathological, and environmental factors.—*J. Dai. Sci. Oct., 1953.*

*The Upjohn Company, Kalamazoo, Mich.

Bovine Dystocia Due to Siamese Twins

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On May 9, 1953, a 6-year-old grade Holstein-Friesian cow was in labor, with four hind limbs presented. After an examination, the obstetrical chains were attached

examination, when no evidence of more extremities was found, traction was applied to the head and fore limbs. The monstrosity was exceptionally large, but so was the cow, and delivery was accomplished by slow, steady traction. Not until then did we know that we had been working with Siamese twins, joined at the sternum as shown in figure 1.

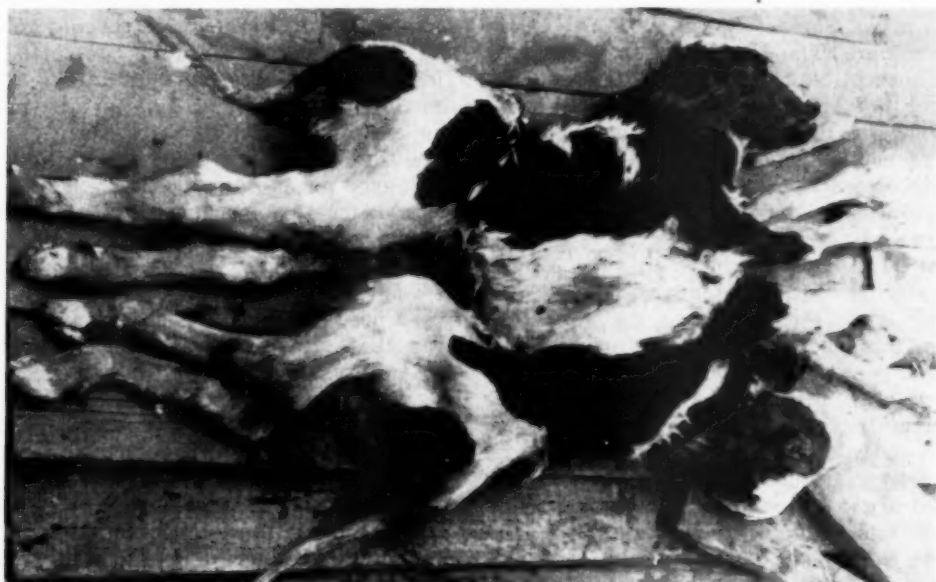


Fig. 1—Siamese twin calves with their amputated rear quarters temporarily restored.

to one of the twins and the owner was asked to apply tension. An easy birth was anticipated but we were unable to move the calf more than a few inches by this method. Even with a fetal extractor, we were able to expose beyond the vulvar opening only the calf's hind quarters and some of the lumbar region. It was apparent that some unusual condition existed but nothing extraordinary could be found.

A monstrosity with two hind portions was suspected, and we again put traction on the fetus and amputated it as far forward as possible. Then, attaching the extractor to the hind legs of the other calf, we repeated the procedure. With both calves amputated at the lumbar region, a large mass could still be detected in the horn of the uterus. The mass was eventually turned so that a head and a pair of fore extremities were presented. After a careful

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Calcium for Uterine Inertia

Calcium gluconate administered intravenously is recommended for human uterine inertia and for the induction of labor. The dose is 10 cc. of a 10 per cent solution. It is also recommended for postpartum hemorrhage due to uterine atony. It can be used in conjunction with an oxytocic.—*J. Am. M. A., Nov. 21, 1953.*

Storage and Dilution of Semen.—In 6,607 services, the average nonreturn rate (fertility) for semen diluted 1:100 was 68.2 per cent; for 1:300, 62.4 per cent. The fertility rate for semen used the day of collection was 68.4 per cent; the next day, 62.5 per cent. In both cases, the difference was highly significant.—*J. Dai. Sci., Nov., 1953.*

Efocaine—An Aid in the Treatment of Bovine Vaginal Prolapse

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THE CONTROL of tenesmus following reduction of a third-degree vaginal prolapse in the cow is a matter of great concern to practicing veterinarians, especially those working in the Rocky Mountain regions of the United States where Hereford cattle predominate. The Hereford seems particularly susceptible to this condition especially during the last two months of gestation. In view of the prevailing range type of management, many cases are not presented for treatment until some time after the initial prolapse has occurred.

A recent case of prolapse is often reduced by the owner who applies some form of external retention suture (hog rings, baling wire, etc.). Due to the fact that the primary cause, be it known or unknown, has not been removed, and since the "suturing process" often aggravates the existing inflammation, the prolapse usually recurs at an early date. By the time such a case is presented to the veterinarian, the prolapsed organ has suffered as a result of exposure and trauma. This increases the irritation, with consequent renewed straining which is often of sufficient severity to cause, in addition, a prolapse of the rectum.

Even if satisfactory reduction is possible after the application of posterior epidural anesthesia, straining often recommences after the effects of the caudal block have worn off.

Clamps, prolapse preventers, and various types of vulvar sutures are used to prevent a recurrence but, in many instances, clamps and sutures are torn out, with resulting mutilation of the vulvar and perivulvar tissues.

Where damage to the vaginal mucosa is considerable, the preferred technique would be to carry out a submucous resection, but many practitioners find this operation tedious and time-consuming; consequently, they

prefer to reduce the prolapse and attempt to control subsequent straining.

Several years ago, attention was drawn to long-acting local anesthetic agents. The anesthetic concerned was supplied in an oil base which, it was believed, would release the anesthetic agent over a protracted period. Other preparations containing various amounts of benzyl alcohol, in addition to the anesthetic agent and oil solvent, were produced, but it was shown later that any prolonged anesthetic duration was due to a neurodegeneration caused by the benzyl alcohol and not to the oil or anesthetic used.

The writer's experience with such agents, when used for caudal anesthesia in the cow, was that straining was usually inhibited for twenty-four hours and in rare instances for forty-eight hours. This benefited some patients, but the severe cases usually recommenced straining after the effects of the anesthetic had worn off.

Alcohol as a caudal nerve block is, in the writer's opinion, not too dependable, the results tending to be erratic.

Within the past year, attention has been drawn in the human field to the use of a new agent for the control of postoperative pain. This agent—efocaine®—does not cause anesthesia by neurodegeneration but exerts its effects by a repository process.¹⁻⁴

Efocaine is a specially balanced solution of the normally water-insoluble anesthetic agents. The solution is at saturation limits so that, upon the addition of minimal quantities of water, complete precipitation occurs. Iason and Shaftel⁵ state, "When efocaine is injected into the tissue, the contact with the body fluid causes a deposition of the active ingredients, producing an anesthetic depot. In short, upon the injections of the solution, an *in vivo* suspension is formed which acts in a repository manner to produce a prolonged duration of anesthesia." The same workers also state, "The anesthetic duration as determined by the skin-prick technique averaged twelve days, with a minimum duration of six days and a maximum duration of eighteen days. This is adequate to control postoperative

Dr. Milne, is now with the faculty of the Ontario Veterinary College, Guelph.

The author is grateful to Dr. A. Halpern, E. Fougere & Co. Inc., New York, for his advice during the course of these observations, and to Mr. C. Guy Stephenson, Goshen Laboratories, Inc., New York, for the generous supply of efocaine which made these observations possible.

pain from almost every surgical procedure. Postoperative anesthesia was observed for more than two weeks in the anorectal surgical group; sphincter control, however, was present after the third to fourth day. There was no evidence of any interference with wound healing and no local tissue reaction. There were no instances of encapsulation, foreign body reactions, sterile abscesses, or tissue slough as had been reported for the oil solutions. We observed no instance of systemic or local toxicity in the course of this study."

Encouraged by the above report, the writer decided to investigate the possibilities of efocaine as a means of controlling tenesmus following the reduction of a prolapsed vagina in the cow.

It has been suggested that pooling of this agent in the tissues must be avoided since a few cubic centimeters of efocaine in one spot might cause the microcrystalline (solid) drug repository to form a bolus which would tend to erode the tissue.⁶ Therefore, the solution should be introduced slowly and continuously as the needle is withdrawn.

Although a pooling procedure is entailed in any epidural block, it was felt that the anatomical structure of the caudal canal would preclude the possibility of bolus formation. In a limited number of autopsies on experimental animals in which efocaine, with India ink added, has been injected, it was evident that the agent tended to flow along the canal and not to collect in one spot.

Since efocaine is essentially 1 per cent procaine, the dosage first tried was approximately that of the 1 per cent procaine hydrochloride solution routinely used; however, because of the slow liberation of the anesthetic agent, the dosage had to be increased. Whereas 6 to 8 cc. of 1 per cent procaine solution produced anesthesia of the tail without interfering with the animal's power of locomotion, it required at least double that quantity of efocaine for a similar effect. Consequently, the arbitrary dose of 20 cc. of efocaine for adult Hereford cows was adopted.

TECHNIQUE OF INDUCTION

The first step in treating such a case is to give 6 to 8 cc. of 1 per cent procaine hydrochloride solution epidurally, using an 18-gauge, 2-in. needle. The needle is left

in situ. By the time the prolapsed organ has been cleaned and prepared, anesthesia of the tail and perineal region should be complete. The prolapse is then reduced and a "shoe string" type of suture applied to the perivulvar tissues. Efocaine, 20 cc., is then injected epidurally and the needle removed. Though not an oily solution, efocaine is more viscous than water and does not flow readily through a small needle, making it difficult to be sure that the agent has in fact been injected into the caudal canal. Therefore, if the first injection was successful, leaving the needle in place during the reduction of the prolapse ensures that the efocaine will be deposited correctly.

CASE REPORTS

During the past few months, 12 adult Hereford cows suffering from a third degree vaginal prolapse, either preparient or postparturient, were injected with efocaine in an attempt to control the severe tenesmus so often encountered in this condition. Reference to table 1 shows that in 9 cases straining was inhibited for at least six days. In the remaining 3 cases, the writer believes that the straining was induced not because of inefficiency on the part of the efocaine but because of rectal impaction. The fecal material which accumulated in the rectum and terminal colon could not be spontaneously evacuated, either because of atonicity of the muscles of the rectum or because of the presence of a purse-string suture around the anus. When such a suture was used, its removal and the emptying of the rectum terminated the straining.

It was impracticable to retain these cases in the hospital indefinitely, so they were usually kept under observation for at least six days. Therefore, in columns 3 and 5 of table 1, where a plus sign is placed after the numeral, it means that the figure refers to a minimum period of freedom from straining. For instance, when cases 3-933 and 3-918 were checked at a later date, it was learned that no straining had been noticed for forty-three and thirty-two days, respectively. However, it is not suggested that the effects of the efocaine were present over these periods.

Sensation returned more quickly to the perineal region than to the tail, even though both regions were completely anesthetized within a few hours of the injection.

tion. This suggests that the effective area of anesthesia, when using a dose of 20 cc. of efocaine, is mainly the posterior part of the caudal canal; yet, from the results tabulated, it can not be denied that straining was held in abeyance. It is quite possible that for conditions affecting more anterior parts, e.g., metritis and enteritis, efocaine might not cause prolonged "suppression of the straining center." This point merits further investigation, especially since injections of dyed efocaine were found to flow along the vertebral canal and not remain at the point of injection.

It is advisable to use some form of vulvar retention suture since the vulvar tissues are often so devitalized and atonic, as a result of prolonged stretching when the organ is prolapsed, that the reduced organ practically "falls out" again when the cow lies down. On the other hand, placing of anal sutures may be inadvisable since their presence seems to invite subsequent straining. Occasionally a cow became incoördinate after the administration of 20 cc. of efocaine but in no case did this exceed a few hours.

It is strongly suggested that this drug

TABLE I—Results of Treatment with Efocaine

Case (No.)	Type of prolapse	No. of days anesthetized		No. days without straining	Remarks
		tail	perineum		
3-1001	prepart. 2 days	9+	1	9+	Cervix opened 36 hr. after admission and efocaine injection. Uterine inertia, so dead calf delivered. Involution slow. Cervix admitted one hand at 48 hr. and 3 fingers at 5 days postpartum. Posterior pituitary extract had no apparent effect on closure of cervix. Sphincter ani reflex positive after 48 hours but rectum ballooned and feces had to be removed by hand.
3-1316	postpart. 1 day, incl. roof of vagina	3	1	4*	Suffering from necrotic cervicitis. Sent home to fatten.* Straining stopped when feces removed from impacted rectum.
3-918	postpart. 10 days	5+	2	**	**Two hours after administration of efocaine, the cow strained, prolapsing vagina and rectum, no vulvar sutures having been applied. Efocaine had apparently not had time to exert its effect. Next day, slight straining due to tight anal suture which, on removal, allowed a huge mass of feces to be forcibly ejected. No straining noticed over next 32 days.
3-130	prepart. (chronic) vagina, also rectum	7	1	13	Recurrent but replaced and sutured by owner on 13th day. On 15th day, cow strained, tore out sutures and again prolapsed rectum and vagina, so replaced again and 25 cc. of efocaine was administered. Discharged 17th day with a sensitive perineum, cow straining slightly on rectal and vaginal examination. Tail insensitive.
3-808	prepart. vagina & rectum	7	2	***	***Straining next day due to impaction of rectum. Relieved by removal of suture and emptying of rectum. Calved and cleaned on 8th day; 36 hr. later, cervix admitted only one finger.
3-604	postpart. 7 days	6+	1	6+	On 10th day, strained and prolapse recurred.
3-723	postpart. 3 days (lacerated)	6	less than 6	7+	Procaine shock syndrome 20 min. after giving 12 cc. of 1% procaine solution and 20 cc. efocaine. Cow licked wall furiously; all visible mucous membranes and white skin extremely pale. Rapid response to antihistamine therapy.
3-589	postpart. vagina & rectum	6	2	6+	Efocaine stopped tenesmus after one of the so-called long-acting caudal anesthetics had no effect—10 cc. of efocaine given initially. Next day, tail showed movement so a second dose of 20 cc. was given.
3-740	pre- & postpart. 1 day	6	6	6	Necrotic vaginitis for 1 week before calving. Efocaine given 24 hr. after calving. Uterine involution poor despite repeated injections of posterior pituitary extract. Cervix admitted 2 fingers on 5th day. On 6th day, cow died from metritis, secondary to the vaginitis. Calf also septicemic on 5th day.
3-743	postpart. 2 days	13	..	7	Prolapse recurred after straining on 7th day. Tail was still anesthetized at time of prolapse.
3-933	postpart. 1 day	16+	..	43+	On 43rd day, tail was still relatively lifeless, no evidence of straining during this period.
3-831	prepart. 2 days	10+	6	10+	Owner expected parturition in 3 weeks. No mammary development 24 hr. after admission, cervix was 2/3 dilated. Uterine inertia. Dead calf delivered without assistance from dam. Uterine involution apparently achieved with repeated doses of posterior pituitary extract, but no effect on cervix which admitted a hand 6 days after parturition. Rectum constantly ballooned. Anal sphincter still flaccid on 7th day.

not be employed if parturition is due within the next six or seven days, because efocaine appears to produce a state of uterine inertia in which no contractions are apparent either before or after dilatation of the cervix. In range animals where the date of service may be unknown, a careful vaginal and rectal examination should be carried out in order to determine the approximate date of delivery. Furthermore, there is evidence that uterine involution, though not inhibited, may be delayed and the cervix may remain open longer than is normal or desirable. If infection, such as necrotic vaginitis, is present at this time, the use of efocaine might jeopardize the life of the animal.

Efocaine is not advocated as a cure for bovine vaginal prolapse but, from the observations here recorded, it is superior to anything yet tried for the control of straining following reduction of a prolapsed vagina in the cow.

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External Fixation of Fracture in a Colt

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A Thoroughbred colt was found with a left mid-metatarsal fracture when 7 days old. When a reinforced plaster-of-paris splint failed, the colt was anesthetized, the limb was prepared for surgery, and a new, sterile, cotton stockinette and two rolls of plaster-of-paris bandage were applied. Four stainless steel, $\frac{1}{8}$ -in., pins were set at divergent angles and in opposite planes, and the bone was fixed in position with sustaining rods and clamps (fig. 1).

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Fig. 1—Colt with splint, showing sustaining rods and clamps to hold the bone in place.

A chloral-nembutal® mixture was used as an anesthetic, tetanus toxoid and antitoxin



Fig. 2—Five months after the fracture, the colt had complete use of the leg.

were administered at the time, and both terramycin® and penicillin-streptomycin mixture were given at intervals later to prevent infection. The colt used the limb as soon as it was set. Forty-four days later, radiographs indicated that callus formation was satisfactory, so the apparatus was removed.

Five months later (fig. 2), there was a good callus, with perfect alignment and function.

A Persistent Fistula in a Dog

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A female Cocker Spaniel, 7 years of age, was presented on May 6, 1953, for treatment of what seemed to be an area of moist eczema on the lateral aspect of the left hip. In the following two days, the lesion developed an underlying fluid and ruptured, discharging a thick, viscid mucous. This became a constantly draining fistulous tract.

Over the next four weeks, various treatments produced uniformly negative results. The history revealed that a similar fistulous condition existed two and one half years earlier in the right flank, subsequent to a bite, across the back, inflicted by a large dog. Two operations were required before healing took place.

After consulting the veterinarian who did the original surgery, it was decided that the present condition was an outcropping of the old fistulous tract. In spite of the radical surgery, which had been performed, apparently the causative agent had not been removed.

Surgery was again performed on June 30, 1953, using pentobarbital anesthesia and a continuous intravenous drip of 5 per cent dextrose in saline solution during the operation. After preparing an area in the left flank in the usual manner for an aseptic approach, an incision 4 inches long was made downward from a point above and slightly lateral to the space between the spinous processes of the fifth and sixth lumbar vertebrae. All involved tissue was removed, using blunt dissection as much as possible. The sinuses were followed by careful probing and by the appearance or

consistency of tissues. The affected areas were dark and contained various amounts of thickened connective tissue.

After dissecting out the main sinus and its ramifications, which extended to the lowest portion of the flank fold, another tract was followed upward to the spinous processes of the fifth and sixth lumbar vertebrae, over them, and into the muscles of the opposite side of the body for a short distance. This involvement, however, was blind, so a tract passing under the vertebrae on the left side was followed into the sub-lumbar muscles and subsequently to the peritoneum at a point posterolateral to the left kidney.

Having decided that the source of infection was in the abdominal cavity, an incision was made through the peritoneum and an undersized left kidney was exposed.

At this point the patient, unable to withstand the prolonged surgery, died, and the dissection was completed postmortem. It revealed that the tract, being walled off from the peritoneal cavity by adhesions, extended through both parietal and visceral layers of peritoneum and into the posterior extremity of the left kidney. This kidney was nonfunctional. It displayed a renal pelvis but was devoid of medullary substance and retained only a thin layer of cortex beneath a thickened capsule.

Summary.—A 7-year-old, female Cocker Spaniel exhibiting a fistula on the left hip was suffering from a degenerated left kidney apparently damaged from a dog bite two and one half years earlier. Discharge from the wound resembled that produced by glands in the mucous layer of the renal pelvis. This fact and the appearance of the kidney suggested absence of infection either in the kidney or along the fistulous tract.

Tumors in Identical Twins.—A tumor in one identical twin should alert the clinician for a possible similar tumor in the other.—*J. Am. M. A., Dec. 5, 1953.*

A New Surface Anesthetic Agent

Northwestern University reports that tro-nothane, synthesized by Abbott Laboratories, produced good to excellent surface anesthesia in 81 to 95 per cent of cases, when applied to mucous membrane as a 1 per cent jelly, cream, or solution.—*Illinois M. J., Nov., 1953.*

Drs. Flynn and Rose are general practitioners. Dr. Rose is now base veterinarian, Great Falls A.F.B., Great Falls, Mont.

Incidence of Perforation of the Bovine Reticulum

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WHEN CONFRONTED with a case of bovine indigestion, veterinarians should consider the possibility of perforation of the reticulum by foreign bodies. However, if the more dramatic symptoms are not present or if the time is not shortly after parturition, the possibility of traumatic gastritis may be minimized.

A frequent comment of veterinarians, who after years of large animal practice have changed to meat inspection, is that had they known the actual high incidence of perforation of the reticulum by foreign bodies, they would have handled many cases of bovine indigestion differently. After several thousand postmortem examinations of dairy cattle carcasses in routine meat inspection work, I came to the same conclusion.

About three fourths of the dairy cattle that are slaughtered have some evidence of perforation of the reticulum by foreign bodies. (In rare instances, perforations also occur through the rumen wall.) Some lesions are minor, a small area of peritoneal adhesions indicating a healed case of peritonitis. Probably some of the damage done by the foreign bodies is so slight that clinical symptoms are not observed. Therefore, it is my opinion that in practice the condition is not recognized as frequently as it is present.

DIAGNOSIS

Diagnosis is sometimes difficult. Signs which may be significant include: indigestion without evidence of prior dietetic error, frequent swallowing, and the characteristic pain reflex if it can be demonstrated. This reflex can usually be detected by applying pressure to the xiphoid area and listening, with a stethoscope over the trachea, for an inspiratory grunt or a catching of the breath. The more characteristic signs of peritonitis or pericarditis may be absent and other organs may be involved, with a consequent variety of symptoms. A wire in the liver will produce different symptoms than will a wire in a lung or in the spleen.

From the U. S. Bureau of Animal Industry, Los Angeles and San Francisco, Calif.

The finding of a high white cell count in combination with characteristic symptoms is indicative of traumatic gastritis. Spurrell and Kernkamp³ report that radiographs, when available, may be of value in the diagnosis of this condition. Several veterinarians have reported on the value of electrical metal detectors. Churchill¹ believes they are of doubtful diagnostic value since pieces of metal are frequently present on the floor of the reticulum without causing injury.

In antemortem inspection, particularly of cattle presented for emergency slaughter, traumatic gastritis was not easily detected unless the condition was acute. This was especially true if organs other than the lungs or heart, or both, were involved. The signs may be obscure, especially if the primary lesion is from penetration of the liver. The accuracy of diagnosis was increased when traumatic gastritis was suspected whenever obscure abdominal or thoracic symptoms were encountered.

POSTMORTEM STUDY

During 1949 and 1950, I made a study of 34,628 cattle slaughtered in an establishment in Los Angeles operating under federal meat inspection. This included 19,241 beef cattle from all parts of the western United States and 15,387 dairy cattle mostly from the Los Angeles milkshed area.

In 1953, I made a similar study of cattle slaughtered in federally inspected slaughterhouses in San Francisco. The 8,246 beef cattle came from approximately the same areas as those slaughtered in Los Angeles, but the 1,326 dairy cattle came mostly from the San Francisco milkshed. The results of these studies are shown in table 1.

This survey indicates that foreign body perforations are common in dairy cows but not in beef cattle or young dairy cattle. Apparently, environment and age are the important factors. Dairy cows are kept in smaller areas, are exposed to more man-made objects in pastures and lots, and are fed more mechanically processed feeds than are beef cattle. In both types of cattle, the percentage of lesions increases with

TABLE I—Organs and Tissues Perforated* by Foreign Bodies from Reticulum

Organs and tissues*						Percentage of animals affected							
						Beef breeds				Dairy breeds			
						Steers and heifers		Cows and bulls		Steers and heifers		Cows and bulls	
Reticulum and peritoneum	Diaphragm and pleura	Lung	Pericardium and heart	Liver		S.F.†	L.A.†	S.F.	L.A.	S.F.	L.A.	S.F.	L.A.
✓						2.3	2.1	10.1	9.4	3.0	3.4	21.2	24.2
✓	✓					1.2	1.9	5.9	5.6	3.1	2.3	18.4	21.5
✓	✓					0.9	1.1	3.6	3.5	—	1.1	14.3	18.6
✓	✓	✓				0.2	0.3	1.0	0.9	—	0.5	3.6	4.9
✓	✓	✓	✓			0.1	0.08	0.7	0.5	—	0.2	2.5	3.6
✓	✓	✓	✓	✓		0.04	0.03	0.9	0.3	—	0.1	2.1	2.9
**Miscellaneous variations						0.3	0.2	1.4	0.7	0.5	0.4	2.3	3.9
Normal						95.3	94.6	77.1	80.1	93.4	92.2	36.1	21.0

*Organs and tissues inflamed but not actually perforated are not included. **Perforations from rumen are included here. †S.F. = San Francisco; L.A. = Los Angeles.

age because of the longer period of exposure. Steers and heifers of both types have a low incidence because most of their lives are spent on the range.

There were a few exceptions to these general trends. Three lots of beef cows (28, 17, and 31 head) from three different sources, averaging about 6 years of age, were slaughtered; 61 (80.2%) had reticular perforations. These cattle had been used for nurse cows and, for several years, had been kept in barns and nearby lots, and fed ground or chopped feeds. Conversely, three lots of mixed breed dairy cows (23, 18, and 14 head), with an average age of 6 years, were almost free of lesions, only 3 of the 55 having reticular perforations. These came from farms where most of the feed had been screened for metal with a magnet and special efforts had been made to keep other bits of metal out of the feed-lots and barns.

Interestingly, the incidence of lesions in dairy cattle from the Los Angeles area was noticeably higher than those of the San Francisco area, probably because in the Los Angeles area dairy cattle are confined to small pastures or lots, whereas in the San Francisco area, pastures of substantial size are often used.

Bailing wire was the most common foreign body found, causing about 75 per cent of the perforations. Nails caused about 20 per cent, and miscellaneous foreign bodies the remaining 5 per cent of the lesions.

When performing a rumenotomy, if no penetrating foreign body can be found, the removal of any loose metallic objects may obviate future trouble. One lot of 26 dairy cattle, sent to slaughter because of chronic mastitis, were from a herd with a history of numerous losses from traumatic gastritis until recently. One year before these cattle

were slaughtered, foreign material had been removed from the premises and metal-free feed was used. Postmortems revealed some adhesions indicating prior traumatic injury in all animals and imbedded wires still present in 3, but no free metal was found in the reticulum. This indicates that in twelve months the animal must purge itself of loose bits of metal.

Sometimes when performing rumenotomies, no object is found. It may be deep in the lesion or may have worked out. It is not uncommon to see definite lesions of a rather deep perforation with the foreign body absent. Lesions in which the foreign body has rusted away can usually be detected by their discoloration.

Finding nails and wire laced through the "honeycomb" folds is common, but these reticular folds are resistant to infection, and inflammation of the affected area was not observed.

TREATMENT

In recent years, there has been a trend toward rumenotomy and removal of the foreign body. Merriman² points out the value of general medicinal treatment of the condition. However, prevention is possible and is to be strongly advocated.

PUBLIC HEALTH SIGNIFICANCE

From the standpoint of meat inspection, if a reticular perforation causes a localized lesion, only that area is condemned. However, if the affected area is extensive, or if a septicemia, pyemia, sapremia, or toxemia has resulted, the entire carcass is condemned. A great variety of bacteria (*Corynebacterium pyogenes*, *Spherophorus necrophorus*, *Escherichia coli* and *Salmonella* sp.) are found in these lesions.

Salmonella are potentially pathogenic to man, as are a number of other organisms,

therefore, care is taken to condemn and destroy infected tissues, organs, and carcasses.

SUMMARY AND CONCLUSIONS

1) Traumatic gastritis is one of the most common diseases of dairy cattle.

2) It is preventable and is often due to careless disposition of sharp metallic objects. Only 20.9 per cent of the beef cows and bulls slaughtered in Los Angeles were affected, while 79.6 per cent of dairy cows and bulls were affected.

3) There are indications that loose metallic objects remain in the reticulum no more than one year.

4) It is not uncommon for foreign bodies to penetrate, cause an infection, and then be removed by reticular movements.

5) Metallic objects laced through the reticular folds do not ordinarily cause any detectable infection.

6) More cases of indigestion and obscure abdominal and thoracic conditions are caused by foreign body penetration than is generally realized.

7) Livestock owners should be advised that its prevention is directly in their hands.

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³Spurrell, F. A., and Kernkamp, H. C. H.: Radiological Localization in Diagnosis of Foreign Bodies in Cattle. *Proceedings Book, AVMA* (1952): 78-84.

Pigs Scour when Silage Is Fed to Sows.—The University of Minnesota for three years fed brome-alfalfa silage to sows. Results were good before farrowing but it usually caused scouring in the baby pigs. This could be stopped only by removing the silage from the sow's ration.—*Farm J.*, Dec., 1953.

Feeding Gilts for Reproduction

Sixty-four gilts, divided into four groups, were given the same feed but in different quantities. All were bred at their second heat period. Half of them were slaughtered at two days, the balance at twenty-five days after breeding. The two groups on full feed

from the time of puberty to parturition produced 25 per cent fewer embryos than the two groups which then were on two-thirds of a full feed. The embryo survival rate for each of the four groups was: those on full feed from weaning to parturition, 32 per cent; full feed to puberty, then two-thirds feed to parturition, 49 per cent; two-thirds feed until puberty, then full feed, 39 per cent; and two-thirds feed from weaning to parturition, 57 per cent.—*J. Anim. Sci.*, Nov., 1953.

Effect of Low Temperature on Breeding Season and Fertility of Sheep

At the University of Kentucky, 20 ewes and 3 rams were placed in a room at 45 to 48 F., from May 26 to October 8, and a similar group was kept in an open pen in the same barn and on the same feed. The average date for the first estrus of the ewes in the low temperature room was July 10; for the control ewes, September 2. Semen from the rams in the low temperature room showed a greater percentage of motile cells. Ten ewes in each lot were bred to the treated rams and 10 to control rams as soon as they would accept service. The treated ewes, bred early, required only 1.9 services per conception from treated rams and 5.3 services from control rams, but with control ewes bred in the normal season there was little difference in the number of services required.—*J. Anim. Sci.*, Nov., 1953.

Genital Organs and Inguinal Hernias

One 20-year-old identical twin girl was normal. The other had never menstruated and had a left inguinal hernia. No internal genital organs could be detected but the urinary apparatus was normal. When operated upon, the hernia was found to contain a rudimentary uterus, an ovary, and a cystic fallopian tube. A laparotomy was not performed to search for the other ovary and tube. It is reported that congenital abnormalities of the internal genitalia usually coexist with abnormalities of the urinary apparatus.—*J. Am. M. A.*, Nov., 28, 1953.

[In some animals, an apparent female with an inguinal hernia usually proves to be a hermaphrodite.—ED.]

CLINICAL DATA

Aspergillosis in Newly Hatched Chicks

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PULMONARY aspergillosis (mycotic pneumonia, brooder pneumonia) is a disease of poultry, the cause of which is generally attributed to moldy litter, moldy feed, or damp brooding conditions. The infection often occurs in the brooder house, as the term "brooder pneumonia" implies.

Eggert and Barnhart¹ reported a case of egg-borne aspergillosis in recently hatched chicks, suggesting the fungus had penetrated through the eggshells during incubation. They described yellow, seedy foci in the lungs, which is characteristic of aspergillosis.

This report discusses an outbreak of aspergillosis among chicks, which was apparently of hatchery origin. Of significance was the similarity of symptoms and lesions to infectious bronchitis, Newcastle disease, and a disease described as chronic respiratory disease.

In the spring of 1952, several 5-day-old New Hampshire chicks from a large commercial hatchery were submitted to the San Gabriel Laboratory. It had been observed that the chicks were gasping and emitting hoarse chirping sounds shortly after delivery to the grower's ranch at 1 day of age. In one group, a few birds were showing nervous symptoms suggestive of encephalomalacia, avian encephalomyelitis, or Newcastle disease. During the next few days, more chicks from the same hatch were submitted from several poultry growers from other districts. The history in all cases was similar.

The hatchery management became aware of the seriousness of the problem when respiratory symptoms were observed in chicks of subsequent hatches as soon as they were removed from incubators. From May 7 to

August 26, laboratory studies were made of 26 broods on 21 ranches, involving approximately 210,000 chicks. The outbreaks were spectacular because of their early occurrence. The mortality varied among the different broods from less than 1 per cent to as high as 10 per cent within the first few days. In most cases, clinical symptoms and heavy mortality had stopped by the tenth day.

Autopsy and Cultural Findings.—Specimens submitted from the first five broods from May 7 to May 19, at 1 to 7 days of age, revealed bronchial plugs varying in color from pearly white to deep yellow, which often resembled the lesions of infectious bronchitis. No gross lesions were present in the lungs or air sacs. Cultures of the bronchial plugs yielded *Aspergillus* and embryo inoculations gave negative results for viruses. The first evidence of air sac involvement, along with bronchial plugs, was observed in 2 chicks 3 days of age, submitted on May 22. The next 3 cases submitted were chicks 2 to 14 days of age. Several birds, particularly the older ones, had nodules in the air sac tissues and lungs characteristic of aspergillosis and the fungus was readily grown on Sabouraud's agar slants.

Chicks examined from 22 of the 26 broods revealed bronchial plugs. Typical aspergillosis nodules with or without other lesions in the respiratory tract were found in only eight of the 26 broods. In ten broods, lesions noted were bronchial plugs and yellow pus in the air sacs or lungs; in eight broods there were bronchial plugs only. In young chicks, the bronchial plugs were pearly white and did not extend into the trachea or bronchioles. In older birds, the plugs were of a deeper yellow, sometimes extending into the lower trachea as a yellow cast and often sending branchlike extensions into the bronchioles. As a general rule, in the chicks under 5 days of age,

From the Bureau of Livestock Disease Control, Division of Animal Industry, California Department of Agriculture, Sacramento.

¹Eggert, M. J., and Barnhart, J. V.: A Case of Egg-Borne Aspergillosis, J.A.V.M.A., 122, (1953):225.

the primary lesions were bronchial plugs. Lung and air sac nodules typical of aspergillosis were usually observed only in birds 5 days or older. *Aspergillus fumigatus* was isolated in all groups cultured, except two. It is of special interest that in one case in which chicks were showing nervous symptoms, *Aspergillus* was isolated from the brain.

Because of the similarity of the early postmortem lesions to virus respiratory infections, chicken embryo inoculations were made on four different occasions. Each time, 12 embryos were used. Emulsions from the lungs, air sacs, bronchial plugs, spleens, and livers of affected chicks were made. Groups of 6, 7-day-old and 10-day-old embryos were inoculated, one half of each age group via the chorioallantoic sac and the others directly into the yolk sac. Half were treated with penicillin and the remainder were untreated. With the exception of 7 embryos, all developed to maturity and hatched out as normal chicks. The 7 embryos which died within forty-eight hours had been inoculated with untreated material and staphylococci were isolated in each instance.

Source of Infection.—In an attempt to trace the source of infection, 200 fertile eggs, representing four of the hatchery's breeder flocks, were brought to the laboratory. These were placed in a 400-egg forced-draft incubator in our laboratory. Approximately 10 per cent of the eggs failed to hatch by the twenty-first day. None of the chicks which hatched showed respiratory symptoms. Autopsy of weak chicks and unhatched embryos failed to reveal any significant lesions. Chicken egg embryo inoculations and cultures on artificial mediums failed to reveal a virus, mycotic, or bacterial infection.

After failing to trace the source of the mycotic infection to hatching eggs, a study was made of the hatchery building and incubator equipment. Petri dishes of Sabouraud's agar were placed in incubators, hatching rooms, incubator rooms, and intake ducts.

The plates were exposed for periods varying from one to five minutes. *Aspergillus fumigatus* was readily grown from all sections of the rooms and equipment.

Eradication of the infection proved to be difficult. The removable parts of incubators were taken out and thoroughly washed with a fungicide. The incubators, walls,

floors, and air intakes were likewise washed and new moisture pads were installed. This effected a partial control but did not eliminate the infection. It was not until the incubators were completely dismantled and drastic disinfection measures were employed that the infection was eliminated.

Summary.—Diagnosis of hatchery-borne aspergillosis involving 26 broods of chicks is reported. It is significant that symptoms were noticed in day-old chicks in several instances. Of particular importance was the fact that the only lesions present in eight of the broods were white plugs in the bronchi, typical of infectious bronchitis. Usually, classical lesions of aspergillosis were not present in chicks 5 days of age or younger.

Drastic measures were necessary to effect eradication from the hatchery.

Bilateral Paralysis of the Serratus Thoracis in a Heifer

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On May 14, 1953, an Ayrshire heifer, 1½ years of age, was presented to the veterinary clinic of the Ohio State University. She was suffering from bilateral dislocation of the scapulas. The owner requested that a sling arrangement be made to raise the body trunk to its normal position between the scapulas.

According to the history, this condition developed spontaneously and suddenly and had existed for three days prior to presentation at the clinic. No injury could be ascertained.

The physical examination revealed (1) no evidence of general systemic disease; (2) the dorsal borders of the scapulas extending 4 inches above the level of the thoracic spinous processes (fig. 1, 2); (3) a well-marked groove between the scapulas; (4) the scapular cartilages being drawn medially and ventrally by the insertion of the serratus thoracis (fig. 1); (5) that when the heifer turned on the forelimbs the scapulas pulled away from the thorax; (6) slight atrophy of the supraspinatus and infraspinatus muscles; (7) the body trunk declining from the tail head to the fore-

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Fig. 1—Posterodorsal view showing the scapulas extending above the level of the thoracic spinous processes, the scapular cartilages drawn medially and downward, and the well-marked groove between the scapulas.

limbs; (8) the condition to be painless; (9) no evidence of rupture of the muscles or their attachments; and (10) a crouching gait.

The clinical diagnosis, based on the history and physical examination, was bilateral paralysis of the thoracic portion of the serratus ventralis muscle.

No other recorded description of this condition in cattle could be found. A brief description of rupture of the muscle is presented in Dollar's "Veterinary Surgery."¹ McCunn² describes the condition in cats and jumping horses.

Jumping may have some direct bearing on the initiation of the lesion in horses and cats. The condition may be unilateral or bilateral. The gait in the affected animal is crouching, since the thorax literally drops down between the forelimbs.

No satisfactory treatment can be outlined. Cats have never been known to fully recover but they seem to accommodate to the disability. Swimming exercises have helped affected horses.² In this case, marked improvement occurred during a rest period in a tie stall from May 14 to June 10, 1953 (fig. 3).

An anatomical review of the serratus ventralis muscle should be helpful in studying this case.

The bovine serratus ventralis muscle is

Fig. 2—Lateral view showing the scapular elevation, the dorsal line decline from the sacral region forward, and the loose attachment of the foreleg to the thoracic cage.

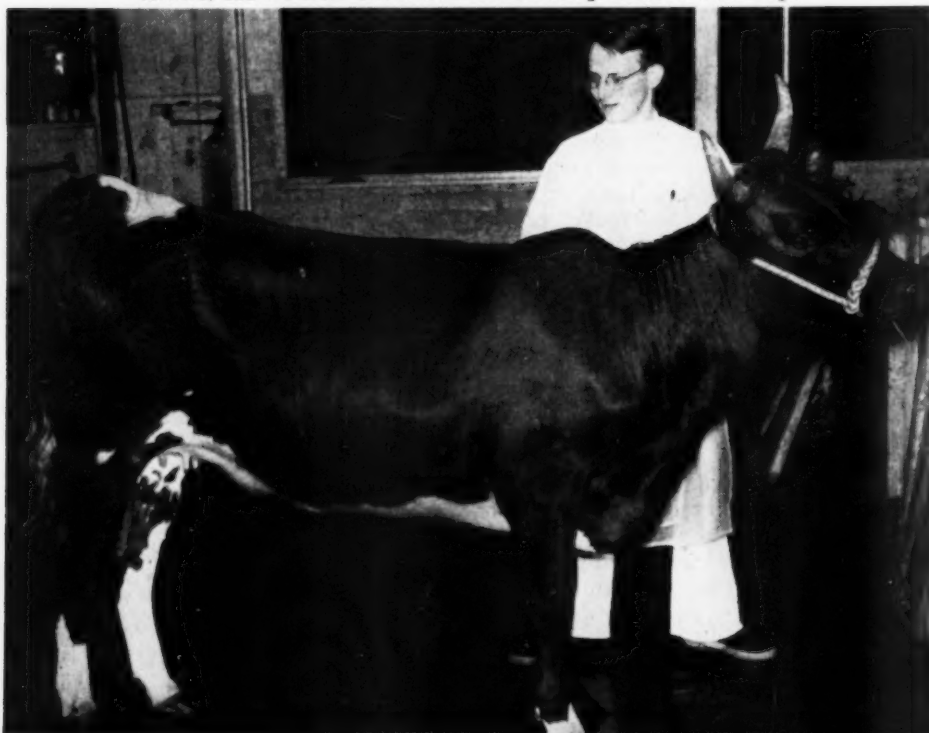




Fig. 3—Lateral view, showing improvement after three weeks of complete rest.

divided into a cervical and thoracic portion. The cervical portion is well developed and has its origin from the second or third cervical vertebra to the fifth thoracic rib and is overlapped posteriorly by the thoracic portion. The insertion of the cervical portion is on a triangular area on the anteroproximal part of the costal surface of the scapula.

The thoracic portion of the serratus ventralis in the ox is thin and is covered by a well-developed aponeurosis that helps sustain the body when the muscle relaxes. It originates from the fourth to the ninth rib and inserts by a flat tendon to the scapula and scapular cartilage posterior to the insertion of the cervical portion.

These muscles form an elastic support which holds the thoracic cage between the two scapulas. The arrangement of the muscles is such that their contraction pulls the scapulas against the body wall. The muscles normally are capable of raising the thorax when contracting together. Independent contraction causes the weight to shift to the limb on the side of the contracting muscle. Normally, the cervical portion of the muscle is antagonistic to the thoracic portion in its effect on the scapula. Acting bilaterally, the cervical portions of the muscles can draw the base of the scapula toward the neck while the thoracic

portions can move the base of the scapula backward toward the thoracic cage. Such action concurs with the forward and backward swing of the limb.

When the limb is in a fixed position, the cervical portions raise the neck or cause it to be drawn laterally. The thoracic portions also aid as a muscle of forced inspiration.

The innervation to the serratus ventralis is derived from the fifth to the eighth cervical nerves.

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Portable Pen Sanitation for Calves

The Animal Disease Laboratory at Auburn, Ala., has been experimenting for years with raising dairy calves in individual pens which are moved each week to clean ground. When placed in these pens the day of birth, losses in the first six months were reduced from 50 per cent to 10 per cent and the calves averaged 28 lb. heavier than similar farm-raised calves. The pens are 10 ft. by 5 ft. and about half covered. These calves seem to withstand winter temperatures as low as 9 F.—*Agric. Res.*, Oct., 1953.

Investigations of Arizona Paracolon Infections in Poults

M. E. GOETZ, D.V.M.; E. R. QUORTRUP, D.V.M.; J. W. DUNSING, D.V.M.

San Diego, California

IN VIEW OF the evident enzootic nature of Arizona paracolon infections of turkey poults in southern California, an effort is being made by the authors to determine the sources of infection, epizootiology, and possible methods of control for this disease.

As reported previously, the authors do not believe that the infection is generally transmitted to healthy poults during the brooding period. The use of various combinations of the sulfonamides and antibiotics have had little effect upon mortality. Therefore, an attempt was made to detect carriers in breeding flocks. Three ranches were selected. Blood samples were drawn by brachial venipuncture and brought to our laboratory. An experimental *A. paracolon* plate antigen* was used. The results are shown in table 1.

TABLE 1—Tabulation of Flock Tests for Arizona Paracolon

Location	Birds	Reactors	A. paracolon	
			Autopsy	isolated
RANCH A				
1st test, Jan.	1,414	6	5	5
Retest, Feb.	1,200	0	—	—
2nd test, March	1,297	0	—	—
RANCH B				
1st test, Jan.	644	36	3	3
RANCH C				
1st test, Jan.	598	11	—	—

There is evidence in the work on ranch A that carriers can be removed from a breeding flock successfully. The retest of a group from which 6 established reactors were removed was negative after thirty days. This of course is a preliminary finding and present plans call for an extensive program of experimental testing this fall to establish whether such a program is practical. The relatively heavy incidence of carriers on ranch B caused the owner to market the remainder of his flock immediately. It is significant that all the reactors found were hens.

Ranchers B and C consented to maintain their respective groups of 33 and 11

From the San Diego County Livestock Department, San Diego, Calif.

*Antigen purchased from Vineland Laboratories, Vineland, N. J.

The authors express appreciation to W. Young and E. Burlingame for technical assistance in this work.

reactors in isolation for thirty days and submit the fertile eggs to our laboratory for incubation and brooding experiments. The birds from ranch B were in the latter third of their fertile period while those of

TABLE 2—Incubation of Eggs from 33 Reactor Hens (Ranch B, Egg Group 1)

Day	Eggs	Removed	Reason	Infected*
1st	157	—	—	—
10th	—	60	infertile	3
20-26th	—	20 (11 live embryos)	random samples	1
28th	—	43	dead embryos	14
Losses before hatching of fertile eggs, 64.9%; livability, 100%; carriers, 0.0%.				
34 apparently healthy poults hatched				

The 34 poults when 20 days old were killed and autopsied and all were negative bacteriologically.

*Isolation of Arizona paracolon upon bacteriological study.

ranch C were in the initial part of the fertile period.

The eggs were collected in two groups each representing two weeks of production. Tables 2 and 3 represent the incubation and brooding of the two groups from ranch B, and tables 4 and 5 the two groups from ranch C.

The primary deduction to be made from group 1, ranch B, is that the *A. paracolon* organism can be egg-transmitted. In this case, all of the infected embryos died before hatching, and the problems of poult mortality and disease carriers did not exist.

TABLE 3—Incubation of Eggs from 33 Reactor Hens (Ranch B, Egg Group 2)

Day	Eggs	Removed	Reason	Infected
1st	133	—	—	—
10th	—	53	infertile	0
14th-23rd	—	20 (2 live embryos)	random sample	6
28th	—	15	dead embryos	0
	—	9	spraddle legs	9
	—	36	apparently health poults hatched	—

BROODING OF 36 POULTS

Day	Poults	Mortality	Infected
4th	—	1	0
6th	—	2	0
20th	—	1	1
22nd	32	killed and autopsied	9
Losses, or weak on hatching, of fertile eggs, 55.0%; livability, 88.8%; carriers, 28.0%.			

In group 2, ranch B, which was in the

incubator when group 1 was hatched, the infection problem was slightly increased. There was a small poult mortality and a decided increase in poult carriers. A significant factor was that no attempt at incubator fumigation was made. In table 4, the progressive severity of the disease is even more evident.

TABLE 4—Incubation of Eggs from 11 Reactor Hens (Ranch C, Egg Group 1)

Day	Eggs	Removed	Reason	Infected
1st	80	—	—	—
10th	—	9	infertile	4
28th	—	16	dead embryos	4
		3	spraddle legs	2
	52	apparently health poult hatched		

BROODING OF 52 POULTS

Day	Poults	Mortality	Infected
2nd	—	1	1
3rd	—	1	1
4th	—	6	6
5th	—	8	8
6th	—	12	12
7th	—	4	4
8th	—	1	1
10th	—	2 (brooder overheated)	2
11th	—	4	4
12th	—	2	2
		4 (destroyed cannibalism)	4

22nd 7 killed and autopsied 6
Losses, or weak on hatching, of fertile eggs, 26.7%; livability, 13.4%; carriers, 85.6%.

As can be readily seen, group 1, ranch C, exemplified a severe outbreak of *A. paracolon* infection and the mortality pattern is identical with field cases we have seen, i.e., losses occurring from the fourth to the sixteenth day.

The eggs came from the group of hens just coming in to their laying season and the fertility was high (89.8%). The relative lack of incubator mortality indicates more viable embryos, even though the infection existed.

We feel that the severe mortality was due to the rapid spread of the infection during the critical hatching period, although the brooder management failure on the tenth day (see table 4) certainly was a factor.

After this experience, a routine fumigation procedure was instituted in the incubator which resulted in lower mortality in the final group (table 5).

The livability pattern in this group showed a decided improvement, principally due to better incubator sanitation and brooder management. However, it is significant that of 42 apparently healthy

TABLE 5—Incubation of Eggs from 11 Reactor Hens (Ranch C, Egg Group 2)

Day	Eggs	Removed	Reason	Infected
1st	97	—	—	—
10th	—	7	infertiles	4
28th	—	37	dead embryos	4
		4	spraddle legs	0
	49	apparently healthy poult hatched		

BROODING OF 49 POULTS

Day	Poults	Mortality	Infected
2nd	—	3	3
3rd	—	1	1
6th	—	3	1
23rd	42	killed and autopsied	32

Losses, or weak on hatching, of fertile eggs, 45.5%; livability, 85.7%; carriers, 76.2%.

poults destroyed on the twenty-third day, 32 were carriers of the organism. It would seem that mortality depends upon the degree and manner of infection.

SUMMARY

An attempt was made to study the epidemiology of *Arizona paracolon* infection from the infected breeding hen, through incubation, and through a brooding period covering the time when poult mortality normally occurs.

The organism is apparently transmitted from the carrier hen, through the egg, to the poult.

Incubator sanitation and brooder management play an important role in the mortality pattern, in the presence of the disease.

Attempts at treatment of the infection have been discouraging.

A program of eliminating carriers from the breeding flock is suggested and further studies in this field are in progress.

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Turkeys Carry Psittacosis Virus.—The Hooper Foundation at the University of California reports the existence of psittacosis virus in turkeys. They were found responsible for a psittacosis outbreak in Texas in 1952, in which 63 persons were affected and 4 died.—*Lab World*, Sept., 1953.

An Opinion on the Use of Large Doses of Penicillin in Intramammary Mastitis Therapy

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There is an increasing tendency by manufacturers to incorporate up to 500,000 or 1,000,000 units of penicillin with a vehicle to be used as infusion therapy in mastitis. It is yet to be shown whether this formulation, or the addition of token quantities of other antibiotics, really improves the recovery rate or whether it is simply a sales-promotion idea.

When penicillin first became available to the veterinary profession, it was expensive and difficult to obtain. After World War II, production increased tremendously and, instead of dispensing penicillin in 100,000-unit vials, various packages were available containing up to 3,000,000 units. One of the most common sizes was the 500,000-unit vial extensively purchased by veterinarians. To this amount of penicillin, a few milliliters of solvent was added, admixed with a vehicle, and 20 to 40 ml. of the mixture was infused into the affected quarter. This provided a penicillin concentration of either 100,000 or 200,000 units per infusion. This dosage level was used for about four years with good results. Published reports have shown that 5,000 to 50,000 units of penicillin infused at varying frequencies produced an acceptable recovery rate.

Apparently, the thought developed that if the usual amount was of benefit, an increased amount might do much more good. This is not necessarily true.

It has been shown that the mode of action of penicillin against sensitive organisms is to prevent the utilization of certain essential metabolic products by certain types of bacteria. Not all bacteria have the same requirements for life and that is why penicillin is not effective against all types; it is primarily effective against the gram-positive cocci.

It has been demonstrated that after the minimal inhibitory concentration (M.I.C.) of the antibiotic has been reached, the sensitive organisms are killed. Increasing the M.I.C. 5, 10, or 100 times does not increase

the rate of kill. Development of resistance to the antibiotic can be brought about either by exposing the bacteria to an insufficient concentration of the antibiotic or by maintaining exposure to the adequate minimal inhibitory concentration for an insufficient time. The latter is probably most applicable to walled-off or encapsulated lesions. In these cases, another mode of approach must be found.

It is commonly accepted that *Streptococcus agalactiae* is still the primary cause of chronic mastitis. Of course, there are exceptional herds, but cows harboring streptococci are found in the ratio of 3 to 1 to those which have pathogens other than streptococci in their udders. The severe mastitis cases, with toxicity or death, or both, are not caused by *S. agalactiae*, but by certain strains of staphylococci, coliform organisms, *Pseudomonas* sp., some yeastlike fungi, and other miscellaneous bacteria which gain entrance by accident. This group, excepting staphylococci, is not classified as being penicillin-sensitive.

In vitro sensitivity tests of *S. agalactiae* cultures show that these bacteria are ordinarily killed by a concentration of 0.1 unit per cubic centimeter of penicillin. The majority of cultures have been found to be sensitive to less than that amount, whereas a few have required a concentration of 0.16 unit per cubic centimeter to inhibit growth.

Let us say the average practitioner infuses 100,000 units of penicillin into a given quarter of the cow. In order to have a concentration of 0.1 unit per milliliter of dilution, the 100,000 units infused should be placed in 1,000,000 ml. of medium. This is approximately 1,000 quarts or 250 gallons, the average annual milk production per quarter, per cow, in the United States.

In vitro sensitivity tests have been run in our laboratory for more than two years on cocci which clinicians thought were penicillin-resistant and on others that were routinely isolated. In no case did we find bacteria that had developed penicillin fastness. An attempt was made to obtain penicillin-fast mastitis pathogens from mastitis workers and laboratories in the Northeast. None of the laboratories contacted had isolated such bacteria. The veterinarian who has written that "penicillin-fastness" develops has never run controlled laboratory experiments to substantiate this claim.

Of course, what happens in the labora-

From the Department of Medicine, State Mastitis Control Program, Ithaca, N. Y.

tory is not necessarily applicable to the clinical patient. Therefore, it is logical to increase the dosage rate, bearing in mind the various possible incompatibilities and the difficulties in diffusing the preparation through the infected tissues. Sometimes the penicillin obviously does not get to some of the areas where it is needed. In view of this, attention should be directed to the type of vehicle used for quarter infusion and adjuvant therapy of a parenteral nature.

As stated earlier, certain groups of bacteria are considered penicillin-sensitive. Of those not sensitive to penicillin, it has been found that some strains of coliform bacteria might be inhibited by 6,000 units per milliliter. If the practitioner expects to treat coliform infections successfully with penicillin, he must, assuming the quarter is producing barely 1 pint of secretion, infuse more than 2,700,000 units. Greater production would require proportionately more penicillin. It would, therefore, seem more rational to use another preparation known to be active against the infecting pathogen.

Conclusion.—It seems that 100,000 units of penicillin is sufficient for use in routine mastitis therapy against sensitive pathogens when incorporated in the proper vehicle. If adequate intramammary dosage fails to give satisfactory results, then other methods of attack should be used or else adequate amounts of another agent with a broader antibacterial spectrum should be employed.

Swine Intradermal Tuberculin Test

The pig is unique in being susceptible to all three types of tuberculosis. The bovine type produces the more severe lesions, the avian and human types being confined chiefly to the lymph nodes. Infection with the avian type, by intraperitoneal inoculation, is often overcome in 112 days and even with infection of the bovine type, skin tests may be negative after 190 days. In such cases, the lesions were culturally negative.

The preferred site for the test is the fold of skin along the anterior border or base of the ear. Pigs can thus be injected and observed when crowded into a small pen often without further restraint. For field tests, 0.1 mm. of equal parts mammalian and avian tuberculin is used. The animals

should be observed at twenty-four to forty-eight hours. An increase of 5 mm. or more in skin thickness may be regarded as a positive reaction. Doubtful animals should be retested in six to eight weeks.—*Vet. Rec., Aug. 22, 1953.*

Clinical Classification of Mastitis

R. LELAND WEST, D.V.M.

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For practical purposes in the field, bovine mastitis may be classified in six types, as follows: (1) mild chronic, (2) severe chronic, (3) subacute, (4) acute, (5) peracute, and (6) gangrenous.

A positive diagnosis of mild chronic mastitis often requires laboratory culturing of milk samples. There are neither local nor general signs. There is nothing but a keg of dynamite waiting for proper conditions to explode into an acute attack on this or some other udder.

Severe chronic mastitis is diagnosed clinically by reaction to the simple chemical tests, such as the bromthymol blue test, and palpation of scar tissue in the dry udder. Many times this fibrosis of the gland becomes so pronounced that the quarters may be observed to vary in size. Experienced cow buyers are always wary of the cow with a "crooked bag."

Subacute mastitis may be detected by flakes observed in the milk drawn into a strip cup or run over a strip plate, as well as the laboratory, chemical, and palpation tests.

Acute mastitis is usually diagnosed by the owner before he consults a veterinarian. He may call it a "hard quarter that gives 'gargety' milk." That usually means an acute local inflammation of the mammary gland, which yields stringy, ropy, thick, or cheesy discharge. The temperature is usually between 103 and 105 F. and the appetite is impaired. Often the cow appears stiff and lame because of the tenderness of the inflamed udder. This may be confused with traumatic swelling of the udder following violent injury. If infection is not present, the secretion from the hard quarter may be scanty but is real milk, although it may be

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Excerpt from talk, "Clinical Mastitis," presented at the Texas Conference for Veterinarians at College Station, on June 5, 1953.

bloody. No systemic symptoms are present and recovery is usually prompt.

Peracute mastitis may or may not be identified by the owner. Very often a good herdsman will observe that a cow is sick and will call professional help before local symptoms become obvious. Many times I have shown an owner watery, straw-colored secretions from an udder which he has milked only a few hours before without observing anything more significant than decreased quantity. For this, the milking machine may be criticized since the milker using a machine does not handle the cow's udder as much or as carefully as in hand milking. Perhaps this is not a valid criticism, for the cow is usually sick and the examination of a dairy cow is not complete until the veterinarian has checked the udder. There will be a small, hard, rapid pulse; rapid, shallow respiration; and high fever. Even in the earliest cases heat and swelling in one or more quarters may be detected, followed in a short time by a change in the character of secretion, from normal milk to watery, straw-colored, or reddish fluid.

Gangrenous mastitis is usually a developmental stage of one of the other types. Also, it is usually the terminal stage. The typical picture is a cow down or ready to go down. Her temperature is normal or subnormal. The conjunctiva is "muddy," the udder hard and often edematous. The secretion is scanty, yellow or red, and foul-smelling. The respiration is shallow and fast. One or more teats soon become cold and blue, and this mortification gradually extends up to the udder tissue.

There are unlimited variations and intergrades between these types, as well as different histories, circumstances, and owners, not to mention methods and drugs for treatment.

Enterotoxemia Vaccine Experiments

Research at Kansas State College with about 3,000 feeder lambs, over a five-year period, indicates that losses in the following three groups were about equal: (1) those vaccinated with type D bacterin (*Clostridium perfringens*); (2) those given 0.2 oz. per head daily of sodium bicarbonate; and (3) the untreated controls.—*J. Anim. Sci.*, 1953.

Traumatic Gastritis in Sheep and Goats

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Berkeley, California

In another article,² the author pointed out the high incidence of traumatic gastritis of cattle in the United States. Sheep, unless quite valuable, are seldom treated on an individual basis, so traumatic gastritis is rarely considered or recognized. Hutyra, Marek and Manninger¹ point out that it does occur in sheep but more frequently in goats.

While doing veterinary meat inspection in Los Angeles and San Francisco, lesions of a reticular perforation were seen in lambs about once in 1,000 head; in ewes and bucks about once in 50 head. The incidence in individual flocks is variable, depending upon the type of pasture and feed.

In one flock of 134 ewes, 121 had lesions of traumatic gastritis. At antemortem inspection, the entire lot was suspected of having caseous lymphadenitis with secondary emaciation. While 33 were affected and 4 were condemned for caseous lymphadenitis, 26, a number of which were also emaciated, were condemned because of peritonitis, pleuritis, pneumonia, pyemia, and pericarditis resulting from traumatic reticulitis. Several lesions still contained a piece of bailing wire varying from 1 to 3 inches long.

The author observed a ram showing symptoms identical with those of traumatic pericarditis in cattle. The diagnosis was confirmed on postmortem inspection. Usually the heavy coat and the tendency of a sick sheep to lie down and show signs of impending death are serious obstacles to diagnosis.

The postmortem findings are the same in the ovine as in the bovine species. Most perforations heal, leaving evidence of localized peritonitis only. In a small percentage of cases, more extensive lesions occur and other organs are affected.

Postmortem inspection on 17 goats revealed 1 with traumatic gastritis. A wire had pierced the lung and produced an abscess there.

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Bat Rabies in Florida

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Jacksonville, Florida

In June, 1953, a 7-year-old ranch child, playing in his yard in Hillsborough County, Florida, was attacked and bitten by a Florida yellow bat (*Dasypterus floridanus*.) The bat remained attached to the child until it was brushed off and killed by his parents. The ranch owner, having read of vampire bat rabies, submitted the bat to the Tampa regional laboratory, Florida State Board of Health. Inclusion bodies characteristic of rabies were found. The brain specimen was submitted to the Jacksonville central laboratory where mice were injected intracerebrally. They died on the thirteenth and fourteenth days, confirming the microscopic evidence of rabies. The virus was further identified as that of rabies by complement-fixation and serum-neutralization tests performed by the Communicable Disease Center, Virus and Rickettsia Laboratory, in Montgomery, Ala. The child's parents were referred to the Hillsborough County Health Department where Pasteur treatment was advised. Fourteen doses of Semple-type antirabies vaccine was administered. To date, four months later, the patient has shown no clinical evidence of the disease.

Additional bats have been obtained from the vicinity of this ranch. These were shot in the evening in flight and from all appearances were normal bats. Six of these, plus the original, have been confirmed by microscopic examination and mouse-inoculation as having rabies. In this group, an additional species was identified as the seminole, or red bat, (*Lasivirus seminola*.)

Bats have been obtained some 30 to 50 miles from the original infection. Rabies has been confirmed from both areas. The Florida yellow bat and the seminole are free-living as contrasted with colony bats. They live in trees and among vegetation rather than caves, houses, and other enclosures. They feed on insects and are not

related in any way to the vampire bat which has never been found in Florida.

Much additional study remains to be done to determine the incidence and distribution of rabies in bats; also the importance of the bat as a reservoir of rabies.

Rabies Morbidity and Mortality

In Persia, a rabid wolf attacked 32 persons, biting 19 about the head, 3 on the face and neck, and 10 on an arm or hand. Only six received antirabies treatment, four remaining free of symptoms, and two dying, both of whom showed symptoms before treatment was started. Of those who received no treatment, 13 remained free from symptoms and the other 13 died. The incubation period for head bites was twenty-four days; neck, twenty-seven days; arm and hand, forty-five days. It is significant that so many with severe untreated lacerations did not develop symptoms.—*J. Am. M. A., Oct. 24, 1953.*

Rabies Produced by Rectal Exposure.—When a rabies virus was installed in the rectum of hamsters, virus was present in the brain as early as twenty-four hours. It was present in the blood in eight hours but could not be demonstrated there after twenty-four hours. Symptoms appeared in 168 hours.—*Cornell Vet., Oct., 1953.*

Human and Canine Toxoplasmosis

In a study of families exposed to canine toxoplasmosis, by C. R. Cole *et al.* (*A. M. A. Arch. Int. Med.*), a woman with toxoplasmic encephalitis and neuroretinitis, because of her acute symptoms and high antibody titer, was considered to have recently acquired the disease. Concurrently, her dog had a *Toxoplasma* infection of the digestive tract.

A second woman in excellent health who had been in contact with an infected dog for four weeks, was found to have *Toxoplasma parasitemia*, leukocytosis, and a *Toxoplasma* antibody titer of 1:160. In neither case was there proof that infection had been contracted from the dog. The latter case substantiates the concept that asymptomatic *Toxoplasma* infection in women may be a source of congenital toxoplasmosis in children.—*J. Am. M. A., Nov. 28, 1953.*

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Undetected Diaphragmatic Hernia in a Cocker Bitch

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Inglewood, California

A 9-month-old female Cocker Spaniel admitted for spaying displayed no detectable abnormalities at presurgical examination. She was normally developed, slightly under-

weight, with a tucked-up abdomen and a full deep thorax. There was no history of previous respiratory or gastrointestinal disturbances. The temperature was normal. During twelve hours of presurgical hospitalization, she appeared normal.

Anesthesia with sodium pentobarbital, followed by ether, was smooth and uneventful. Respirations were deep and regular, the pulse and heart sounds full and strong, and mucous membranes normal.

As the abdomen was opened, acute dyspnea commenced followed by acute anoxia. The exaggerated respiratory movements were accompanied by inspiration and expiration of air through the abdominal incision. The pulse and heart sounds speeded up but remained full and strong. Death occurred within a few minutes.

An autopsy was performed at once. The gross findings were as follows:

In the right side of the diaphragm, there was a large elliptical opening into the thorax (fig. 1) through which most of the

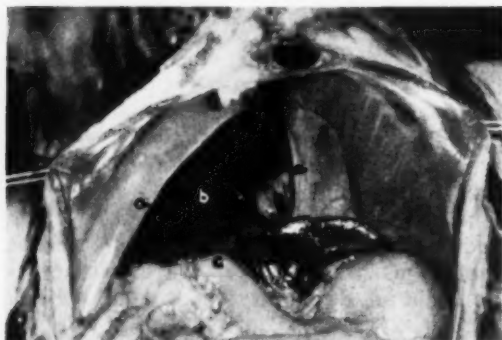


Fig. 1—Posteroventral view of diaphragm, with large hernial ring (a), the prolapsed liver (b), and duodenum (c).



Fig. 2—Lateroventral view of right thoracic cavity with ribs excised to show the hernial ring (a), prolapsed liver (b), collapsed right lung (c), and heart (d).

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liver, the first portion of the duodenum, and part of the gastrohepatic omentum were prolapsed (fig. 2), with displacement of the right lung forward to the apical part of the thorax.

In the thorax, the mediastinal septum, heart, cranial and caudal vena cava, and the right phrenic nerve were in their normal positions. The left lung was normal. The right lung was much reduced in size and apparently airless (fig. 2). From its gross appearance, it is doubtful if this lung had ever been functional.

Macroscopically, there was no evidence of a tendinous center in the right side of the diaphragm and the muscular portion encircling the rupture was narrow and pale. The rim of the rupture was smooth and gave no evidence of a possible traumatic origin. The left side of the diaphragm was grossly normal (fig. 1).

Further inquiry revealed that the dog had twice been struck by a car but without apparent injury. Whether the hernia was of traumatic or congenital origin could not be determined. Without an autopsy, this fatal surgical accident might have been attributed to anesthetic failure or to shock.

Human Histoplasmosis Epidemics

Studies of 13 epidemics of disseminated human pneumonitis is reported (*Am. Rev. Tuberc., Sept., 1953*). Of the 116 persons involved, all of the 94 skin-tested were positive; 44 of the 54 given complement-fixation and precipitin tests in the early stages had a high titer; and *Histoplasma capsulatum* was cultured from the soil in 11 of the 13 locations. Roentgenograms taken four years after the epidemic showed disseminated miliary pulmonary calcification in 61 of 73 cases examined. [No mention is made of animal involvement.]—*J. Am. M. A., Nov., 28, 1953*.

Present Status of Erythromycin

Erythromycin, the antibiotic derived from the mold, *Streptomyces erythreus*, is more active in an alkaline than in an acid medium. Gram-positive bacteria are more sensitive to it than gram-negative organisms. Its spectrum of activity is quite similar to that of penicillin. However, it is effective against certain *Brucella* organisms, particularly the varieties *suis* and *melitensis*, and some species of *Actinomy-*

ces, *Corynebacterium*, and pathogenic *Clostridium*. It has demonstrated some activity against large viruses, including the psittacosis virus, but not against smaller viruses.

The daily oral dose is 20 to 25 mg. per kilogram of body weight. Adequate concentrations appear in the serum in three or four hours but decline rapidly after four to six hours. Preparations for intravenous administration are now available. Both must be repeated every six to eight hours.—*Proc., Staff Meet., Mayo Clinic, Nov. 4, 1953*.

Lungworms in Cattle in Maine

All of the 50 cattle in a herd, except heifers isolated in the barn, exhibited a deep, chronic cough. Because of their emaciated condition, 7 were slaughtered and lung specimens revealed numerous lungworms (*Dictyocaulus viviparus*), caseous nodules, pneumonia, and pulmonary emphysema, but bacterial cultures were negative.

During June and early July, the affected animals had been on heavily grazed Ladino pasture where whitetail and other deer, which are commonly infested with these parasites, often grazed. By September, the animals were improving, the disease apparently having run its course. Continuous phenothiazine treatment, on a herd basis, to break the life cycle of the parasite, and supportive treatment are recommended.—*Maine Vet., Oct., 1953*.

Rabbit Myxomatosis Still Hopping.—In the thirteen months since myxomatosis was unwisely introduced into wild rabbits in France, it has spread into four countries to the north, hopped the channel to England, and is now suspected in Spain. It recently appeared in a second location in England where, because of the terrain, attempts to enclose the infected area with fences would be impractical.—*Off. Internat. Epizoot., Nov. 19, 1953*.

Pancreatitis and Leptospirosis

Two human cases of acute pancreatitis associated with *Leptospira icterohaemorrhagiae* were reported from Brazil. One case recovered, the other died. The agglutination tests were positive for both; the second case was confirmed on autopsy. The authors found only 5 similar cases in the literature.—*J. Am. M. A., Nov. 28, 1953*.

Effects of Infectious Bronchitis on Egg Production

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Owatonna and St. Paul, Minnesota, and Des Moines, Iowa

A RECENT widespread epizootic of infectious bronchitis in chickens in a midwestern area affected some 14,000 pullet chicks during the first five to seven days of life, and approximately 100,000 sexually mature pullets in varying rates of egg production. This report is mainly concerned with the disease in young chicks and the possible effects on egg production when they reach sexual maturity. Thirty-five such flocks, of 150 to 400 pullet chicks, suffered severe respiratory symptoms at ages ranging from 3 to 7 days. The condition was diagnosed as infectious bronchitis by serum-neutralization tests. The chicks, a highly producing hybrid strain, suffered death losses varying from 5 to 35 per cent. The extent of losses seemed to be affected by environmental conditions.

Inhalant sprays were used in all cases as symptomatic treatment, and a mild flush of molasses water was used in almost all cases as an appetite stimulant. The 18 to 20 per cent commercial chick starters fed were slightly dampened to increase feed consumption. Death loss and rate of recovery were apparently not influenced by the duration of spraying and medications. Certain flocks which received little care in so far as medication was concerned recovered with less death loss than others which received more careful attention.

In the laying houses, feeds varied from 16 per cent all mash to 26 to 40 per cent balancer with grain fed free choice. In general, management was typical of that provided the ordinary farm flock, and in no case were the birds subjected to unusual hardship.

EFFECT ON PRODUCTION

At 7 months of age, the time at which 70 to 80 per cent egg production is expected from this variety of birds, none of these flocks was producing at more than a 50 per cent rate. Each flock was ensured a 16 to

17 per cent protein intake. Various vitamin supplements, tonics, and other treatments were attempted. Affected flocks were treated for external and internal parasites. However, regardless of the procedures employed, production of more than 55 per cent could not be obtained.

Flock owners observed that many birds apparently laying no eggs went to the nests with the same regularity as birds producing normally, and each flock had the appearance of high producers. The death loss during the first six months of production averaged less than 2 per cent per month. Attempts at culling proved unsatisfactory; more than 90 per cent appeared, by ordinary culling standards, to be in production, with widely spread pubic bones and adequate capacity between the pubic and keel bones. Depigmentation at this stage seemed about equal in all birds. The vents were large, moist, and pliable. A considerable number, however, showed poor handling qualities, in that a heavy layer of fat encased the viscera, rendering the abdomen less pliable than is usual in productive birds.

Because of the common history of infectious bronchitis in such flocks, it seemed possible that the unsatisfactory production might be the result of the disease. Many thousands of birds of identical parentage, but having suffered no respiratory disease, were producing at a normal rate (70 to 90%), which indicated that heredity was not a factor. Two theories were considered applicable to the conditions observed: (1) All chicks had been permanently affected by the disease in such a way that they were incapable of laying at what might be considered a normal rate; (2) not all of the birds had been permanently affected, but some were affected to the extent that they produced no eggs, even though the flock had the appearance of being in full production.

EXPERIMENTAL FINDINGS

In view of these two possibilities, it was decided that a flock, consisting partly of the above mentioned variety and partly of a cross-bred variety, all showing the described symptoms, should be

From the Hy-Line Poultry Farms (Broadfoot, Owatonna, Minn.; and Smith, Des Moines, Iowa) and the University of Minnesota, St. Paul (Pomeroy).

The authors acknowledge the cooperation of Hy-Line Poultry Farms, Des Moines, Iowa, and Owatonna, Minn.; Mr. and Mrs. Harold Kulas, Owatonna, Minn.; Mr. and Mrs. Lloyd Griffith, Kasson, Minn.; and the School of Veterinary Medicine, University of Minnesota, St. Paul.

carefully trapnested for fourteen days. The two groups had been reared together, but the cross-bred birds were four days older than the hybrid birds. Both varieties had simultaneously shown severe respiratory symptoms (at 3 and 7 days, respectively). Possibly because the cross-bred chicks were four days older, the death loss was somewhat less than in the hybrid chicks. (This had been observed in other field cases of bronchitis.) The death loss in the hybrids was 9 per cent, and in the cross-bred chicks 5 per cent. The survivors were raised together under typical mid-western farm conditions. They received an adequate ration and showed no outward symptoms of being abnormal in any way. Production commenced at about 5 months of age while the flock was still on range. This was somewhat later than usual for either variety. At 6 months of age, the birds were placed in a divided laying house and were well-fed, as nearly as possible under similar conditions.

At 8 months of age, both groups were trapnested for fourteen consecutive days. The eggs from both groups exhibited poor interior quality and many more pullets than eggs were found in the nests each day. Normal layers and birds afterward found to be abnormal were indistinguishable even to the experienced observer, and both pens of birds had the appearance of highly producing flocks. The record showed that 43.0 per cent of the hybrids and 10.5 per cent of the cross-bred birds frequently visited the nest, often in three to five day "clutches," without laying. Some of these birds visited the nest as many as three times in a single day. These were termed "false layers." For a summary of the fourteen-day trapnesting, see table 1.

AUTOPSY FINDINGS

A postmortem examination was made on 26 of the false layers. The viscera were surrounded by, and embedded in, a heavy layer of oily fat which was mottled in such a way as to suggest pigmentation from the numerous yolks found in the body cavity. These yolks were of a cheesy consistency, with roughened and pitted surfaces. In no case did the oviduct exceed the length of 10 inches, and many showed less than 20

per cent development. The oviducts of 2 hens were not patent anteriorly, while another showed development only in the central portion. The membranes of the body

TABLE 2—The Record of the Flock Trapnested for Ten Days

	(No.)	(%)
Birds in pen	260	.....
False layers	29	11.2
Hens laying 6 to 10 eggs	118	45.4
Hens laying 3 to 5 eggs	51	19.6
Hens laying 1 to 2 eggs	25	9.6
Hens that did not lay or go to nest	37	14.2

cavity were thickened and opaque. Regardless of the fact that no eggs had been produced, the ovaries in all false layers were found to be fully active, with three to seven yolks which were greater than $\frac{3}{4}$ of an inch in diameter. In a number of birds, resorption of yolks was taking place, and in such cases yolks were not found in the abdominal cavity.

In another flock of the same variety of hybrid chickens, where production had never exceeded 50 per cent, the owner had no knowledge of bronchitis infection. However, the incidence of misshapen eggs with poor interior quality, together with the observance of a number of apparently false layers, prompted the authors to arrange for ten consecutive days of trapnesting (table 2).

Postmortem examination of 10 false layers from this flock showed the oviducts to be of normal length for producing birds. Many yolks had been dropped into the body cavity, some having become embedded in

TABLE 3—Summary of Results of Trapnesting Two Flocks

	Divided flock		
	Hybrid	Cross-bred	Hybrid
Age infected	3 days	7 days	Unknown
False layers	43.0%	10.5%	11.2%
Birds producing 60% to 70%	33.0%	35.6%	45.4%
Total	76.3%	46.1%	56.6%

TABLE 1—A Summary of the Fourteen-Day Trapnesting

	Hybrid pen		Cross-bred pen	
	(No.)	(%)	(No.)	(%)
Birds in pen	123	.....	143	.....
False layers	53	43.0	15	10.5
Normal layers (8-16 eggs)	41	33.3	51	35.6
Low intensity layers (4-7 eggs)	7	5.7	19	13.3
Occasional layers (1-3 eggs)	11	8.9	7	4.9
Birds that did not lay or go to the nest	8	6.5	47	32.9
Died	3	2.4	4	2.8
Total number of eggs for 14 days	554	.....	698	.....
Total production in percentage for 14 days	.....	32.2	.....	34.9

the abdominal fat and adhering to the mesentery. Translucent cysts containing a clear fluid were observed attached to the ovary or oviduct in 7 of the birds. In 1 bird, the wall of the infundibulum contained 14 such cysts, varying in size from $\frac{1}{8}$ to 1 inch in diameter, with many small pieces of cheesy yolk material dispersed through-

out the body cavity or within the oviduct. Ruptured oviducts were found in 3 birds.

Postmortem examination of several birds which entered the nest several times but laid only one or two eggs showed similar but less severe reproductive disturbances.

Serum-neutralization tests for infectious bronchitis made on blood plasma from this flock, just prior to trapping, were positive, indicating past exposure to the virus.

SUMMARY

Because of the failure of 35 flocks of chickens, involving some 14,000 birds, to produce at what is considered a "normal" rate, two flocks (1 consisting of 2 kinds of chickens) were trapped. False layers, found on autopsy to have active ovaries but abnormal oviducts, visited the nest with the same regularity as birds in heavy production (table 3).

CONCLUSIONS

1) Birds of identical breeding, from the same hatchery and raised in the same area, were performing normally. Only those from one hatchery, in a two-week period, were affected. This eliminates genetics or egg-transmitted defects as etiological factors.

2) Poor management should not be the cause since two veterinarians and several poultry servicemen were consulted regarding the affected flocks.

3) Only in their bronchitis outbreak did these birds differ from the other flocks.

4) It, therefore, appears that infectious bronchitis during the first week after hatching may interfere with later egg production in some birds; not in others.

Actinomycosis in Man in Scotland

Stating that "We must put aside the traditional and popular fairy tale about infection from grass and straw," the *British Medical Journal* (Nov. 14, 1953) reports a survey of the incidence of actinomycosis in man in Scotland. A thirteen-year survey revealed 186 laboratory-confirmed cases, 98 of which were in five northeast agricultural counties having only 10 per cent of the total population. The incidence in those counties was similar for large towns and rural populations but in the rest of Scotland rural cases were more common.

The cervico-facial region was affected in 65 per cent and the abdominal region in 19 per cent. Of the former group, 22 followed

tooth extraction, 33 had carious teeth, and 5 had face injuries. The organism *Actinomyces israeli* is often found in the human mouth but how it is associated with agricultural pursuits remains to be determined.

Spontaneous Diabetes Mellitus

No important differences were found in dogs with spontaneous diabetes and those in which it was produced by alloxan, pituitary extracts, or by subtotal pancreatectomy. Its resemblance to human diabetes is noted, even to a predilection for older females. All cases had extensive histological abnormalities of the islands of Langerhans or of the pancreas as a whole with marked depletion of insulin. The pituitary bodies were grossly normal, and the adrenal glands not significantly changed. A fibrous arteriosclerosis, not atherosclerosis, was more related to the dog's age than to the diabetes.—*J. Am. M. A.*, Nov. 28, 1953.

Actinomycotic Pyemia in Man

When hospitalized sixteen months after developing a vague illness with mild fever and losing nearly 40 lb., a patient had a cough, purulent sputum, a tender fluctuating swelling in one arm and one limb, and smaller gray-blue lesions on his fingers and feet. Cultures from an abscess and from sputum revealed *Actinomyces israeli* (bovis). The abscess was thick-walled and contained a viscous blood-stained pus with numerous yellow granules: the typical "ray fungus."

While on streptomycin treatment for a week, symptoms and new lesions continued to develop. However, on a penicillin and sulfonamide regime, he gradually improved and after six months' treatment was able to resume work.—*Brit. M. J.*, Oct. 24, 1953.

Bloat and Rumén Motility

At the University of Illinois, motility of isolated rabbit intestine was inhibited, *in vitro*, by rumen content from bloated cows and by extracts from the pasture forage which had caused the bloat but by neither of these materials when they were not involved with bloating. The bloat effects of extracts from various legumes and grasses as well as chemical compounds vary. Sheep bloated and died when given extracts of Ladino clover.—*J. Anim. Sci.*, Nov., 1953.

Demodex Folliculorum Studies. III. A Survey of Clinical Cases in Dogs

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OVER A PERIOD of years, various surveys have been made on the incidence of demodectic mange in dogs, especially in various breeds, whether long-haired or short-haired types. In addition to breeds, the age groups, sex, character and extent of lesions have been tabulated.

Most of the surveys over the years have been only incidental to other data on demodectic mange. Morris¹ reported on the incidence of demodectic mange in 86 dogs representing 16 breeds and found that the disease was more prevalent among short-haired dogs, and that the greatest incidence was among dogs under 1 year of age, although older dogs were also susceptible.

Unsworth² reported on 51 cases of which 39 (76%) involved animals with short hair. The lesions were confined to the head in 55 per cent of the cases; and the greatest number of cases (86%) were characterized by uncomplicated squamous-type lesions.

Kral³ reports that the disease is found in all canine breeds but especially in short-haired animals. He reports that the disease occurs also in "Shepherd dogs, Airedale Terriers, and other long-haired breeds but rather rarely."

This survey was made to report on the incidence of demodectic mange as found in the veterinary clinic of the Ohio State University in recent years. It was undertaken to check on the assumption that the incidence of the disease is more widespread in one breed than another and that certain age groups are more frequently affected. Most of the reported cases were from Ohio, but many infected dogs were received from surrounding states, some had been reared in other states, and still others had been in field trials and on trips to many parts of the United States.

The records of 507 cases of demodectic mange were reviewed and data collected on the following: breed, whether long-haired or short-haired; sex; site, extent, and type of lesions; age; the length of time the disease had existed; and presence of other parasites, either internal or external.^{4,5}

RESULTS OF SURVEY

There were 45 standard recognized breeds and 24 various cross breeds affected. It is interesting to note that Morris¹ reports that Boston Terriers were most frequently affected. Kral³ mentions that the disease "appears particularly in short-

haired animals such as Dachshunds, Bull-dogs, Boxers, short-haired Fox Terriers, short-haired Pointers, Dalmatians, and various dwarf breeds." Our survey in Ohio and vicinity indicated that Cocker Spaniels and Cocker Spaniel cross breeds were most often affected.

In our data, there is relatively little difference between the incidence of infection in long-haired and short-haired dogs, the percentage being 42 per cent for long-haired breeds and 58 per cent for short-haired breeds. Among the 45 standard breeds affected with demodectic mange, there were 15 long-haired breeds; while among the 24 cross breeds, there were 15 long-haired types. The incidence of infection would seem to be influenced by the popularity of the long- or short-haired breeds in the area involved, or by an increase in the popularity of certain breeds in some years.

There were no sex variations: 260 of the dogs were females, 247 were males.

The extent of the lesions on the body showed that the head was involved in 455 (89%) cases, with 211 (41%) instances where the lesions were on the head alone. The head and forelimbs were involved in 37 (7%) cases, while the entire body was extensively covered in 162 (31%). In 52 (10%) patients without visible head involvement, there were isolated lesions either on the neck, body, or legs. In a few instances, there was only a small, round area on the back or under the neck, and some had only small areas on the legs. Several dogs had small lesions on the tail and head. One had lesions on the head and left hind leg; the owner had reported that it used this leg to scratch the lesions on its face.

The age incidence furnished the most in-

TABLE I—Incidence of Demodectic Mange According to Age (507 Cases)

Age	No. of cases	Age	No. of cases
Under 6 months	170	5 years	12
6-12 months	155	6 years	4
12-18 months	68	7 years	4
18-24 months	23	8 years	3
2 years	40	9 years	1
3 years	16	11 years	2
4 years	8	12 years	1

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teresting clinical data. More than half of the dogs (64%) were under 1 year of age.

While the histories given by the owners indicated that most of the cases were of recent origin, that is within a week or two, the clinical evidence indicated that the majority had existed for at least several months. In the majority of dogs under 6 months of age, the infections were evidently of short duration, while in dogs several years old many were chronic cases, some of which had been treated many times by veterinarians in various parts of the country.

The squamous type of lesions predominated, especially in the region of the head. Some of the lesions on the head were small, almost imperceptible, and were first noticed when the dog was brought to the clinic. In many instances, where the lesions entirely covered the head, body, and legs, the pustular type predominated. Some cases were so severe that large areas of skin were necrotic.

Internal parasites such as nematodes and cestodes were present in 213 cases (42%) while other external parasites, such as ear mites, ticks, lice, or fleas, were found in 19 cases (3.7%).

DISCUSSION

The youngest infected dog was a 6-week-old Dachshund with lesions on the face which had been there since birth. The mother, a 2-year-old, was also infected. A Doberman Pinscher, 11 years old, with no previous history of the disease, represented 1 of the oldest cases. This dog had small lesions on the rear leg which the owner said had appeared a week before.

A great many of the cases had a history of lesions starting around the head and then spreading to the neck, legs, and rest of the body. Occasionally, the spread from a minor lesion on the face to the rest of the body was rapid. One Doberman Pinscher, brought to the clinic for ear straightening, had no visible evidence of mange at admittance. This dog developed small lesions on the head while in the clinic and in approximately a week the entire body was covered with an extensive, weeping, bloody, pustular demodectic dermatitis. Demodectic mites were demonstrated in enormous numbers.

Many of the cases brought to the clinic had no previous history of lesions and many of the clients did not notice the small

denuded areas or claimed that the denuded areas were from abrasions or scratches received in some previous misadventure. Often when these dogs with small lesions on the head were clipped, other lesions hidden by the hair were found on their bodies or legs, therefore clipping the dog before treatment is a routine procedure.

We have observed a great many cases in which 2 or 3 dogs housed closely together were infected, or where the mother and whole litter were infected. One group included 3 Pointers and 1 English Setter. One dog was 8 years old, 2 were 20 months old, and the Setter was 16 months old. All were in poor condition, underweight, and affected with extensive pustular lesions. In another case, a 3-year-old Dachshund broke out with extensive lesions (squamous-papular) prior to whelping and during lactation. All of the pups in her 3 litters also developed demodectic mange. Between gestation periods, her coat seemed normal and showed no evidence of lesions. In one litter of Beagles, all the puppies became severely infected.

Many of the cases in dogs over 2 years old were of a chronic nature and had been treated several years by various veterinarians. A 2-year-old Springer Spaniel had been affected since puppyhood and had been treated periodically. An Airedale, 5 years old, had a history of demodectic mange for at least three years and had been treated repeatedly by veterinarians, but the condition never completely cleared.

We had no cases in which demodectic mange was the primary cause of death. When the few dogs that were reported as dying from mange were examined, other causes for death were found.

In some cases, the lymph glands were involved. One hound, 2 years old, was emaciated and extensively infected with pustular lesions which were further complicated by myiasis. The animal was destroyed. On autopsy, all body lymph glands were swollen, with the prescapular, prefemoral, and mandibular glands being quite large. Sectioning of these glands did not reveal any mites. This dog was a kennel mate of 2 others that the owner reported had died from demodectic mange; examination revealed that the deaths were caused by coccidiosis.

SUMMARY

The data on 507 cases of diagnosed de-

modectic mange received in the veterinary clinic of the Ohio State University were tabulated according to breed, long- or short-haired type, sex, site and extent of lesions, age, time that the disease existed, and presence of concurrent parasitic infections.

The incidence of cases of demodectic mange received in the clinic has shown an increase in the past ten years.

The percentage of infection for long-haired breeds was 42 per cent, while that for short-haired breeds was 58 per cent. Forty-five standard recognized breeds and 24 cross breeds were affected. Cocker Spaniels and Cocker Spaniel cross breeds were most often affected.

More than half the infected dogs (64%) were less than 1 year of age; the youngest was 6 weeks and the oldest 12 years.

The squamous type of lesion predominated, especially where the areas involved were in the region of the head. While the pustular-type cases were fewer in number, they often involved the whole body. The extent of the lesions of the body showed that the head was involved in 455 cases (89%), with 211 (41%) instances where the lesions were on the head alone.

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Enterotoxemia in British Sheep

This pulpy kidney disease is widespread in sheep of all ages and at all times of the year in Britain. The highest mortalities occur with the first flush of grass in the spring and when root crops are fed in the fall. *Clostridium welchii*, type D, vaccine and serum are effective. The serum will cut short an outbreak but has limited value as a prophylactic. A modified, improved vaccine is being tested.—*Vet. Rec.*, Sept. 5, 1953.

Parasites and Immunity Phenomenon

The immunological reaction of sheep exposed to *Haemonchus contortus* and *Trichostrongylus* infection includes an edematous change in the mucous membrane of the abomasum or small intestine, depending upon the site of adult worm attachment. This "self-cure" reaction occurs the same day as the rise in blood histamine which results from the administration of larvae.—*Vet. Bull.*, Sept., 1953.

Cultivation of Canine Disease Viruses in Chicken Embryos

When a ferret-adapted canine hepatitis virus and canine distemper virus were passaged through chicken embryos, they became nonpathogenic, or of reduced pathogenicity, for ferrets, depending on whether surviving or dead embryos were used as inoculum for successive eggs. No immunity was conferred on ferrets by the avianized distemper virus but some protection was given by the avianized hepatitis virus.—*Vet. Bull.*, Sept., 1953.

Weather Influence in Bluecomb.—Bluecomb in poultry is defined as a pathological complex resembling shock in the early phase, with enteritis and nephritis in less acute cases. Data accumulated in field outbreaks in Florida indicate that climatic stress might be a contributing factor. A maximum temperature exceeding 85 F. was found to occur a few days before most cases developed. A similar study has been conducted in the New England States. The effect of low temperatures has also been studied.—*Science*, Nov. 13, 1953.

Combined Therapy in Tuberculosis

Karlson and Feldman of the Mayo Foundation, Rochester, Minn., report that following treatment of several groups of guinea pigs, experimentally infected with tuberculosis, the combined use of isoniazid with streptomycin caused greater regression of the lesions than did either drug alone. The most desirable effects resulted from a daily injection of 0.25 mg. of isoniazid and 2 mg. of streptomycin daily for sixty-one days. No evidence of drug-resistant tubercle bacilli developed.—*Am. Rev. Tuberc.*, Oct., 1953.

The Use of Chlortetracycline (Aureomycin) in the Chinchilla

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THIS LABORATORY began its work with the chinchilla in the winter of 1946, and, early in 1947, undertook the problem of determining the predominating causes of death in this species. Prior to this time, very little was known about the etiology of chinchilla diseases, and essentially nothing had been done to ascertain facts that would lead to possible future specific therapy.

Up to June 20, 1949, 1,005 postmortem examinations on chinchillas of all ages were performed at the laboratory.¹ It was determined that pneumonia accounted for 250 deaths, and acute, epizootic gastroenteritis for 234 deaths. We have concluded, on the basis of symptomatology and failure to reproduce the disease with isolated bacteria, that many of the pneumonia deaths were caused by a virus, similar to atypical virus pneumonia in man. Our observations suggest that acute epizootic gastroenteritis may have a viral etiology. Species of *Escherichia*, the paracolon group, *Salmonella*, *Shigella*, *Pseudomonas*, *Proteus*, and *Borrelia* have been isolated from fresh cultures of droppings from typical cases of gastroenteritis. The feeding of viable organisms of these species did not, however, reproduce the symptoms found in typical epizootic gastroenteritis, but, with the exception of *Pseudomonas* and *Proteus*, produced a typical bacterial enteritis with the attendant symptom of diarrhea and, in some instances, acute constipation. No studies have been conducted with bacteria-free filtrates, however.

Since the laboratory was working primarily in the field of applied research, we were most anxious to obtain some chemotherapeutic agent that would be helpful in both of the above important diseases. Penicillin dosage in the treatment of pneumonia and other diseases of the chinchilla in the field was based on weight, in accordance with human adult dosage. It has been our experience that such dosage in the chinchilla has been inadequate. In studies

on increasing dosage schedules, a maximum initial dose of 400,000 units of penicillin (100,000 units crystalline penicillin and 300,000 units procaine penicillin, intramuscularly), and the use of carbogen hoods, have reduced mortality of animals showing typical symptoms of bacterial pneumonia by 50 per cent. During this time, it was interesting to note that penicillin, even in massive doses, proved ineffective in the treatment of suspected virus pneumonia. At this time also, in attempts to find a therapeutic agent for the treatment of so-called "epizootic gastroenteritis," sulfamethazine and succinyl sulfathiazole appeared to be the drugs of choice.

In 1949, it was decided to attempt to determine the value of chlortetracycline in the treatment of these two diseases and its applicability to the chinchilla. The reported inhibitory effect of this drug upon some of the larger viruses interested us greatly. At that time, however, only an insoluble form of crystalline chlortetracycline was available, which made dosing difficult. However, 97 animals were put on test with the drug to establish its toxicity in the chinchilla, and its effective therapeutic dosage. At first, dosing was accomplished by the feeding of spersoids® and, in some instances, by direct dropper feeding of the crystalline antibiotic in distilled water. With the advent of the water-soluble form, administration of the drug was simplified. The preferred method is to mix the required dose with a liquid vehicle and leave it before the animal for six hours. Excellent results have been obtained by adding the drug to a molasses-base fluid, developed by this laboratory and marketed under the trade name brencochin, that is palatable to chinchillas, which are notorious for their low fluid intake. Results of controlled tests using this method of administration showed that the mature chinchilla will tolerate 25 mg. of water-soluble crystalline chlortetracycline orally every six hours for ten consecutive days with no untoward effects.

We found, during the experimental period, both from a laboratory standpoint and through field trials, that chlortetracycline

¹From the Brenon Medical and Biological Research Laboratory, Inglewood, Calif.

²Brenon, H. C.: Postmortem Examinations of Chinchillas. J.A.V.M.A., 123, (1953): 310.

is specific for the suspected virus pneumonia in the chinchilla. This is a severe disease in the species and may reach epizootic proportions. We also found it successful in hemolytic streptococcal infections of the eye, and found it was specific in streptococcal skin infections. All bacteriological infections were confirmed by laboratory diagnosis.

We have maintained an experimental herd of 32 animals which are regularly kept on a feed containing chlortetracycline antibiotic residue. We have observed that, in this experimental herd, there has been no infection of any type since the date of inception of chlortetracycline feeding. This leads us to believe that feeds containing this drug work well from a preventive standpoint.

We are continually plagued with deaths due to various types of bacterial enteritis, and we are continually on the lookout for chemotherapeutic agents that will assist in the inhibition of disease-producing intestinal bacteria. During the past year, we have found that all animals treated with chlortetracycline for virus pneumonia had very low intestinal bacterial counts. This led us to investigate the plausibility of incorporating this antibiotic in therapeutic concentration in a palatable feed, in order to combat this disease entity. We have been able to determine by bacteriological culture that a dosage of 12.5 mg. of chlortetracycline per day over long periods acts as an intestinal bacterial inhibitor. This laboratory is now further investigating these possibilities.

Some interesting facts relative to the use of antibiotic feed supplements containing chlortetracycline, in our hands, have been noted: namely, their use has markedly cut down the incidence of infectious and transmissible diseases; the growth rate of animals has been accelerated; and there has been no evidence that the drug in any manner causes infertility. This last finding has not been our experience with other antibiotic residues.

EVALUATING DRUGS FOR CHINCHILLAS

There are some factors that must always be given prominence when attempting to evaluate a drug or antibiotic for use in the chinchilla.

1) *Means of Administration.*—Palatability is of extreme importance since the

chinchilla can best be dosed successfully by the oral route, but parenteral routes (subcutaneous or intramuscular injection) are practical.

2) *Facility of Administration in a Large Herd.*—Drugs that must be administered by dropper are, of course, less practical. It, therefore, becomes necessary to use a vehicle in the form of a palatable feed or liquid that may be administered in small cups or through the drinking water.

3) *The Establishment of Toxic Levels for the Chinchilla.*—The fact that the pharmacologist has determined the acute and chronic toxicity for the guinea pig and other laboratory animals does not mean that the same holds true for the chinchilla, in spite of the fact that these species are closely related.

4) *The Establishment of a Safe but Effective Therapeutic Dose.*—The theory that, if one aspirin tablet cures a headache in an hour, six will cure it in ten minutes, is, apparently, too often applied in treating animals. Adequate, but safe, dosages must be administered for optimum results.

CONCLUSION

This laboratory stands firm in its belief that, in the chinchilla, there is more to be gained by the use of an antibiotic as a preventive rather than as a therapeutic agent after disease appears. We feel that chlortetracycline (aureomycin) comes nearer to fulfilling this requirement than any other agent so far tested by us.

Ringworm infection of cats is highly infectious in children and vice versa. It does not cause a loss of hair.—W. A. Hagan, D.V.M., Ithaca, N. Y.

Fatal Snake Bite in a Dog

A Fox Terrier bitch was seen fighting with a brown snake 4 feet long at 11 a.m. The snake, which was coiled around the dog's neck, was killed but not identified. In five minutes the bitch was prostrate, hyperexcitable, and respiration was accelerated. Two oval puncture marks on the lower lip were incised, irrigated, and a ligation attempted posterior to the wound. In thirty minutes the pulse was weak and intermittent. Breathing stopped at forty-five minutes after the fight.—*Austral. Vet. J., June, 1953.*

Scrapie—A Study in Ohio

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THIS DISEASE is known by many names, *i.e.*, *la tremblante du mouton* or *prurigo lombaire* in France, *gnubberkrankheit* or *traber krankheit* in Germany, *la tembladera* in Spain, rubbers or goggles in England. The term "scrapie" is of Scotch origin and pertains to the clinical signs the affected animal exhibits, such as rubbing or scraping against fixed objects. Scrapie is the most accepted term in English literature.

This paper is presented for the purpose of reporting on the disease in Ohio.

The Division of Animal Industry of the Ohio Department of Agriculture has observed scrapie in five flocks of Ohio sheep. The first known case to be reported in Ohio was observed on Nov. 5, 1952. With the event of 4 additional cases within ninety days, an extensive study was started to increase our knowledge of the epizootiology of this disease.

The sheep industry of Ohio, realizing that this condition has not been enzootic to Ohio sheep, was desirous of obtaining a better understanding of it. This paper records the results of the combined efforts of all parties concerned, from the research, as well as the regulatory, phase of treating the condition.

HISTORY

Scrapie has been known in Britain for more than two hundred years. M'Gowan¹ states that the condition was first recorded in 1732. It was reported by Besnoit and Morel² in 1898, and by Bertrand, Carre, and Lucam³ in 1937. M'Fadyean⁴ reported it in 1918, Stockman⁵ in 1926, and Greig *et al.*,⁶ from the Moredun Institute, in 1940. The disease, which is not widespread at the present time, appears to be prevalent in certain areas of Germany,⁷ the Aveyron region of France, and the border regions of certain shires of England and Scotland. In recent years, scrapie has been reported in Canada.⁸⁻¹¹

The first positive case of scrapie reported in California was in October, 1952.¹² This condition also appeared in Australia in the summer of 1951,¹³ and was diagnosed in New Zealand in June, 1952, in 2 Suffolk ewes imported from England in 1950.¹⁴ Positive cases were also reported in Illinois in 1953.¹⁵

From the Division of Animal Industry, Columbus, Ohio.

ETIOLOGY AND TRANSMISSION

Numerous theories have been advanced as to the etiology of scrapie. Dammann,¹² M'Fadyean,⁴ and Bertrand *et al.*³ attempted, without success, the artificial transmission of the disease by the inoculation of sheep with tissue suspensions from typical cases. Cuille and Chelle,¹³ however, submitted evidence that it could be transmitted by inoculation and that the etiological agent was a virus capable of passing through the Chamberlin filter L3. They also presented evidence that it could be transmitted without coitus by continued proximity of young animals to infected sheep. They were not able to demonstrate the hereditary transmission of the disease. It was, therefore, concluded by these men that scrapie was an infectious disease. M'Gowan¹⁴ proposed the theory that sarcosporidia was the etiological agent. The theories of hereditary influences and close inbreeding have also been advanced. Gaiger¹⁵ believed that the ram was the common source of the disease and that an infected animal was not dangerous to healthy animals. He also stated that an infected ewe did not necessarily show signs of the disease. Wilson, Anderson, and Smith¹⁶ presented evidence that the causative agent of scrapie was filterable and that it was possible to maintain the agent by serial passage in sheep. Greig⁶ stated that there is considerable evidence indicating that the disease can be transmitted from either the ram or the ewe to the immediate progeny under natural conditions. There is also evidence that such transmission results from congenital infection, as distinct from hereditary diathesis. The infective parent can be apparently normal at time of mating and may never, or perhaps after a lapse of several years, exhibit typical signs of the disease. The progeny may exhibit the clinical signs after an incubation period of about eighteen months to three years or longer. Sheep of all ages can be infected. The flock incidence ranges from 4 to 20 per cent, and runs a course from six weeks to six months or longer, invariably terminating in death. Greig⁶ reported on pasture contact and that the disease can be transmitted after incubation periods of twenty-three months to three years.

CASE HISTORIES

Case 1.—On Nov. 15, 1952, an investigation was made on the premises of farm A. The owner had a registered Suffolk ewe, purchased as a yearling at a purebred sale in July, 1951, which had been acting abnormally.

In the summer of 1952, the ewe began showing signs of puritus, manifested by

scratching and rubbing against fixed objects. These signs gradually became more severe, resulting in extensive traumatic irritation and extreme emaciation. No anorexia was observed.

On Nov. 15, 1952, the ewe was restless and moved about the pen in an excited manner. It would back up to the side of the pen, rub the buttocks, elevate the head, protrude the tongue, and smack and lick while making jerky movements with the head. The wool over the body was dry, the skin lacking tone. All the wool had been rubbed off of the rump, leaving the skin dirty and thickened.

When the ewe was released from a reclining position, she manifested much difficulty in regaining her feet and, after finally gaining some equilibrium, stumbled and walked sideways, giving evidence of cerebellar ataxia. In a few minutes, she stood rather quietly with the ears drooped and eyes wide open, showing lateral nystagmus.

The owner agreed to euthanasia of this ewe so that laboratory findings could be correlated with the symptomatology.

Case 2.—Shortly after the diagnosis of scrapie in the ewe on farm A, we visited farm B; farmer B was a breeder of purebred Suffolk sheep from whom farmer A had purchased the first infected ewe. At that time, his sheep were on pasture and we did not examine his flock. He assured us that he felt that none of his sheep were or had been affected. He said that he would be bringing his flock in for the winter the following week and if he noticed any of his sheep showing symptoms of scrapie he would contact our office at once.

On Dec. 5, 1952, we received a letter stating that he had a 4-year-old Suffolk ram which he felt might be affected. This ram, which had been isolated, was down and hardly able to stand when put on his feet. He showed extreme cerebellar ataxia, loss of wool around the region of the rump, jerky movements of the head, and smacking of the lips when the denuded area of the skin was rubbed. The skin showed loss of tone and the wool over the body was extremely dry. The temperature was normal, ectoparasites could not be found, and lateral nystagmus and drooping of the ears were evident. The remainder of the flock of 180 sheep was in good condition with the exception of 1 ewe which showed a loss of

condition, but no other symptoms suggestive of scrapie.

The ram was submitted to the pathological laboratory for further study.

Case 3.—A call from a general practitioner, reporting a suspected case of scrapie, caused an investigation to be made on Jan. 2, 1953, on farm C. The sheep in question was a registered 3-year-old Suffolk ewe bred and reared on this farm.

The owner reported that, during the previous few months, this ewe had gone down in condition, was walking awkwardly, rubbing the wool from her sides and rump, and did not breed. This was the only sheep affected in a flock of 60.

Examination revealed a normal temperature, appetite fairly good, but a loss of body condition. The wool over the body was dry and the skin was lacking tone. Along the sides of the body and rump, much of the wool had been rubbed off, leaving the skin dull, dirty, and thickened. No ectoparasites or breaks in the skin could be found. When the skin in the denuded areas of the rump and sides was manipulated, the ewe would show jerky movements of the head, accompanied by smacking and biting of the lips and teeth. Cerebellar ataxia was evident through the stilted gait and muscular incoordination of all four legs. On standing, she would spread out her legs, lower her head, and the ears drooped loosely.

On January 6, she was brought to the animal disease laboratory at Reynoldsburg for isolation and further observation. Her symptoms became more exaggerated and on January 30 she was found in a comatose condition. The necropsy revealed no gross lesions.

Case 4.—On Feb. 19, 1953, an investigation of a suspected case of scrapie in a registered Suffolk ewe was made on farm D. She was exhibiting marked symptoms which were characteristic of the disease—abnormal gait, particularly of the pelvic limbs, loss of wool on the rump and sides, and extreme itching at these sites.

Her condition was first noticed in July, 1952, when she would back up to objects and rub affected areas around her tail and rump. The condition progressed to the flank and sides and in December an impairment in her gait was noticed. At this time, she was confined to the barn and placed on a grain ration.

On Feb. 19, 1953, she was taken to the animal disease laboratory at Reynoldsburg for observation; when her symptoms became more marked, she was sent to the pathological laboratory on March 5.

Case 5.—An investigation was made on farm E on Feb. 20, 1953, where 1 Suffolk ewe was exhibiting initial symptoms of scrapie, evidenced by itching around the tail and rump and a slight impediment of the gait. The owner described a condition which had been in his flock for the past six or seven years and was typical of scrapie.

The foundation stock for this flock was a group of ewes and rams which had been purchased from a breeder in Canada. During 1953, the owner of farm E lost 8 ewes with the condition and claimed he had lost 2 or 3 ewes every year with the typical symptomatology described.

This ewe was taken to the animal disease laboratory at Reynoldsburg on Feb. 20, 1953, and held for observation. Symptoms became more marked, so she was sent to the pathological laboratory for autopsy on March 5.

NECROPSY FINDINGS AND LABORATORY RESULTS

The 5 animals submitted to the pathology laboratory for necropsy exhibited lesions of emaciation, traumatic irritation, and parasitic infestation. Bacteriology reports for all tissues submitted were negative. All

laboratory animals inoculated with blood, brain, and spleen suspensions, to eliminate any possibility of pseudorabies, were negative.

HISTOPATHOLOGY

All animals were necropsied in the terminal stages of the disease or not more than one hour following death, and representative sections of tissues were obtained in 10 per cent formalin for microscopic studies. Tissues other than medulla oblongata, pons, and cervical spinal cord were negative microscopically.

Medulla Oblongata.—The histopathological studies of the medulla revealed extreme degeneration and vacuolation of the neurons (fig. 1). The degree of neuronal involvement varied from partial to complete degeneration. The vacuolation ranged from slight intracytoplasmic vacuoles to complete vacuolation, resulting, in some instances, in an eccentric positioning or peripheral margination of the nucleus, and sometimes in complete disappearance of the nucleus. In many neurons, there was disintegration of the Nissl substance. The severest vacuolation in the medulla oblongata seemed to occur immediately anterior to the calamus scriptorius. Some tissue sections evidenced a slight suggestion of gliosis, and all sections studied revealed a noninflammatory condition.

A number of neurons showed intracytoplasmic and intranuclear inclusion bodies varying from 1 to 2 μ in diameter. These bodies were demonstrated with hematoxylin-eosin and methylene blue stains.

Pons and Cervical Spinal Cord.—Microscopic lesions similar to those found in the medulla were observed in the pons and cervical spinal cord. The degree of severity was not as great, however, as that of the medulla.

Cerebellum.—Two of 3 cases studied microscopically evidenced Purkinje cell degeneration. This was not a constant finding.

Cerebrum.—In all cases studied, no microscopic lesions of the cerebrum were observed.

CLINICAL SIGNS

The onset of this disease is extremely insidious due to the slow incubation period which varies from eighteen months to three years. Clinical signs in ewes usually appear just before, or shortly after, lambing.

Cutaneous Signs.—Roughness of the skin

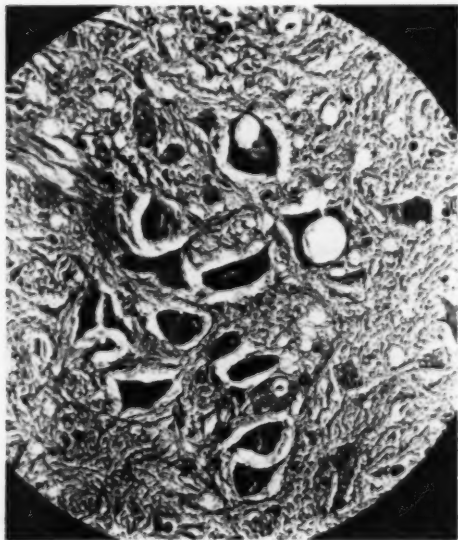


Fig. 1.—Extreme degeneration and vacuolation of the neurons in the medulla of a sheep with scrapie (hematoxylin and eosin stain). $\times 235$.

and disturbed wool are the initial cutaneous signs. There is depilation of wool on the crown of the head, extending in linear form partly down the bridge and sides of the muzzle. Some loss of wool is also observed around the eyes. The buttocks are usually devoid of wool, and sometimes skin eruptions are present on the face, neck, and legs. The first sign of puritus is over the lumbar region, gradually progressing to all parts of the animal's body. Scratching against fixed objects usually occurs at this stage. The "scratch reflex" is manifested by a smacking or tremor of the lips and vigorous wagging of the tail when the skin of the back is rubbed.

Nervous Signs.—The nervous signs, both motor and sensory, vary from one animal to another, and the victim appears more apprehensive and excitable than usual. The eyes have a fixed, wild, startled expression and the pupils are dilated, the head and neck are carried stiffly and higher than usual, and the ears stand erect in an unnatural position but may droop at various intervals. When disturbed, the animal exhibits fine muscular tremors, usually of the head. The affected animals appear to move in an aimless and stupid manner, are restless, getting up and lying down, repeatedly. Increased thirst and anorexia are common signs, and there may be grinding of the teeth and an alteration in the character of the voice or bleat. The front legs are stiff and a definite aberration of gait is observed, in some respects resembling a donkey trot. In more advanced cases, the toes of the hind feet drag on the ground with a knuckling of the pasterns and fetlocks. The hind legs appear to be locked or fixed and locomotion seems painful. When attempting to trot, the hind legs are thrown out laterally, sometimes resembling a straddling gait. When frightened or chased, the affected animal may fall down and exhibit epileptiform convulsions, with a loss of consciousness. During the convulsions, which last only a few minutes, the body is rigid, the bicycling syndrome is displayed, the eyes are drawn upward exposing the sclera, and a frothing of the mouth is observed. Following the epileptiform convulsions, the animal usually regains consciousness and trots away. Sometimes a series of convulsions occur in rapid succession. Fainting is also a common sign and undue excitement may result in death. Paralysis of the hind quarters eventually results in complete paraplegia.

TREATMENT AND CONTROL

Control.—Control measures in New Zealand during the outbreak of scrapie in June, 1952, consisted of quarantine followed by slaughter of the entire flock. Permission to restock was given four weeks after slaughter. All sheep sold from the affected flock were traced and slaughtered and compensation was paid at full stud value.

Slaughter of infected and exposed sheep is the method of control in Canada.

In California, all exposed sheep were destroyed and indemnity was paid to the owners.

In Ohio, the Division of Animal Industry immediately quarantined all sheep on the five exposed premises, where constant vigilance is being maintained. It was agreed by representatives of the sheep industry and the regulatory officials of this state that only after careful study and investigation should a slaughter-indemnity program be considered.

Treatment.—There is no treatment known for scrapie.

SUMMARY

The 5 infected sheep submitted to the pathology laboratory were found to be positive for scrapie, upon histopathological examination. In all cases, there were vacuoles in the neurons of the medulla oblongata. Routine microscopic examination of tissue sections from the medulla of sheep presented for other conditions were negative. The diagnosis was based on history, clinical signs, and histopathology of the brain, demonstrating vacuolization of neurons in the medulla and degeneration of Purkinje cells.

The best area to demonstrate vacuoles in the medulla is just anterior to the calamus scriptorius. No breed is immune to this disease, sex is not a factor, and there is no seasonal incidence. Wilson, Anderson, and Smith,¹⁵ in 1950, demonstrated that the causative agent of scrapie is filterable and that it can be maintained by serial passage in sheep. The flock incidence is 4 to 20 per cent. The disease runs a course from six weeks to six months or longer and the period of incubation can range, for natural infection, from eighteen months to three years or longer, affecting sheep of all ages.

The first stage lasts about three weeks and the signs are intermittent and difficult to observe.

Cuillé and Chelle⁷ demonstrated that scrapie is an infectious disease. They were

unable to demonstrate hereditary transmission.

It is postulated that the condition in Ohio is not that of an explosive type.

Further research is now being conducted at the animal disease laboratory at Reynoldsburg, Ohio. Results will be reported upon the completion of these investigations.

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Frankfurter casings are being used in sterilizing medical instruments. The transparent artificial sausage casings allow the permeation of steam but later serve as a barrier for bacteria and contamination. They are particularly valuable for storing sterilized instruments, such as a rubber catheter, hypodermic syringe, and needles.

Erysipelas Bacilli in Healthy Pigs

Virulent *Erysipelothrix rhusiopathiae* have often been recovered from the tonsils, intestines, and gall bladder of healthy swine. In a herd of 639 marketed between October, 1951, and January, 1953, 192 (30%) harbored virulent *Ery. rhusiopathiae*. Of these, 115 were in the tonsils only, 53 in the tonsils and one or both other locations, and only 24 in the gall bladder, or Peyer's patches of the intestines, or both. Practically all of the latter group were found during the summer months. Isolation of the organism averaged only 11 per month the first four months of 1953 but averaged 43 from May to October, inclusive.

Since pigs with erysipelas infection are frequently unthrifty, the 41 per cent which were slightly or markedly stunted were recorded separately. Of them, 29.6 per cent harbored the erysipelas organism, compared to 27.9 per cent for the thrifty pigs.

The influence of season was marked, many more bacteria being found in the warmer months. This could be due to contact with the ground since the incidence dropped sharply when snow arrived. It is apparent that healthy pigs may carry virulent erysipelas organisms and be the source of infection when moved to new areas.—*Canad. J. Comp. Med.*, Nov., 1953.

Feeding Penicillin Did Not Prevent Swine Erysipelas

At the State College of Washington, 5 weanling pigs were placed in each of eight lots on the same basal ration. For four lots, 80 Gm. of penicillin G was added per ton of feed. On the twenty-fifth day, the pigs in two lots with, and two lots without, penicillin were infected with erysipelas by the dermal scratch method. For three days their temperatures exceeded 106 F.; the scratch areas were red, swollen, and firm; and the pigs were indifferent to feed and slightly stiff. Their growth was retarded for about two weeks but no deaths occurred.

When marketed, there was no significant weight difference between the infected and the noninfected pigs but the lots on penicillin feed had made a slightly faster gain, with about a 7 per cent economy of feed. No lesions attributable to the erysipelas infection were found on slaughter.—*J. Anim. Sci.*, Nov., 1953.

Effect of Exposure to Hog Cholera Virus Before and After Vaccination with Modified Live Virus Vaccine

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THIS EXPERIMENT was designed to learn whether hog cholera, modified live virus, vaccine² will protect pigs exposed to hog cholera virus shortly before, at the time of, or shortly after, vaccination. In actual field use, exposure may occur at any time during immunization, and it is essential that we know what may be expected in the face of untimely exposure.

The tests indicate that the modified live virus does establish early protection. In the first published reports on experiments in normal animals, it was demonstrated that some resistance to laboratory challenge was present as early as the second day post-vaccination,¹ and protection of all vaccinated animals was established in five to seven days.²

PRELIMINARY EXPERIMENTS

Forty-eight hog cholera-susceptible Hampshire pigs, in good condition, weighing between 80 and 95 lb., were obtained and housed as a herd in quarters which were isolated from outside contact. Eight of these pigs were placed in separate quarters and infected with hog cholera by the subcutaneous injection of 1 cc. of whole blood virus (more than 10,000 m.l.d.). These were to be used for subsequent contact challenge of vaccinated animals in order to more closely duplicate conditions of field exposure.

Ninety-six hours following this injection, 4 of the infected pigs and 15 of the remaining 40 were placed in a single pen which was known to be infected since animals dying of hog cholera were removed one day before. On the first day following the exposure, 3 of the 15 normal pigs were vaccinated with the recommended dose of 2 cc. each of a regular commercial lot of modified live virus vaccine, administered intramuscularly. Three more were similarly vaccinated on each of the third and fifth days following exposure. The remaining 6 normal pigs were left unvaccinated as controls. All pigs were kept in contact with the infected animals from the time of exposure to the death of all of the contact pigs. The vaccinated pigs and controls were observed for twenty-three days after exposure, temperatures were re-

corded, and autopsies performed on all dead animals.

Two of the 3 pigs vaccinated one day after exposure survived, whereas the third vaccinated pig and the controls succumbed (table 1). All pigs exposed three and five days before vaccination

TABLE 1—Results of First Experiment

Time of exposure*	Mortality ratio—deaths/total	
	Vaccinated	Controls
Before vaccination		
5 days	3/3	1/2
3 days	3/3	2/2
1 day	1/3	2/2
Simultaneous	1/3	2/2
After vaccination		
1 day	1/3	2/2
2 days	0/3	2/2
3 days	0/3	2/2
4 days	0/3	2/2

*Both vaccinated and control pigs were exposed to the contact exposure group ninety-six hours after infection. The average temperature of the infecting contact animals at this time was 105.6 F.

succumbed, as well as all but 1 of the controls. In all dead animals, antemortem symptoms and postmortem lesions were those commonly associated with hog cholera. The 1 surviving control showed transitory symptoms and febrile reaction, but apparently possessed sufficient immunity to survive contact.

Three of a group of 5 susceptible pigs were exposed and vaccinated simultaneously, and the 2 additional pigs were left unvaccinated as controls. Two of the vaccinated pigs survived, and 1 vaccinated pig and both controls succumbed.

Twelve additional susceptible pigs were vaccinated. They were exposed to hog cholera-infected pigs in groups of 3, together with 2 unvaccinated controls with each group, on the first, second, third, and fourth days following vaccination. Of these, only 1 of the 3 exposed on the first post-vaccination day succumbed, whereas all 8 controls developed the disease and died. The remaining groups of vaccinated pigs showed no symptoms of hog cholera.

SUPPLEMENTAL EXPERIMENTS

This preliminary study indicated that some protection might be expected from vaccination with modified virus vaccine even in pigs exposed to hog cholera one day before vaccination. However, the numbers of pigs in each phase of the test were not large enough to be statistically significant.

Therefore, 92 susceptible Hampshires, weighing 62 to 89 lb., were used in subsequent tests. As described in the first test, 8 pigs were infected with hog cholera to serve as contacts. Each test

From Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.

*Hog cholera modified live virus vaccine, rabbit origin, (vacuum dried) ROVAC.® Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

group consisted of 7 vaccinated and 7 unvaccinated control pigs. One hundred and twenty hours following infection of the contact pigs, groups of pigs were exposed. This exposure occurred one and two days before, simultaneously with, and one, two, and three days after the groups were vaccinated. In these tests, pigs were observed for twenty-six days after exposure and autopsies were performed on all dead animals.

TABLE 2—Results of Supplemental Experiments

Time of exposure*	Mortality ratio— deaths/total		P value ³	Significance
	Vacci- nated	Controls		
Before vaccination				
2 days	6/7	7/7	0.5000	No protection.
1 day	3/7	7/7	0.0350	Significant protection.
Simultaneous	2/7	6/7	0.0513	Significant protection.
After vaccination				
1 day	1/7	7/7	0.0023	Highly significant protection.
2 days	0/7	7/7	0.0003	Highly significant protection.
3 days	0/7	7/7	0.0003	Highly significant protection.

*Both vaccinated and control pigs were exposed to the contact exposure group 120 hours after infection. The average temperature of the infecting contact animals at this time was 105.7 F.

As shown in table 2, there were some survivals in the groups exposed before, or simultaneously with, vaccination, which would indicate that some protection was afforded under the conditions of this test. The "probability values" in these groups indicate this protection to be statistically significant.

Six of the 7 animals exposed one day following vaccination survived, as did all those exposed later, as compared with the death of all control animals. These results are highly significant.

CONCLUSIONS

From the results of these trials, it would appear that, in healthy pigs, significant protection may be afforded by a single injection of modified live virus vaccine even when it is used one day after exposure to hog cholera virus by contact with pigs dying of the disease. However, the degree of protection is not such as to obviate the need for hog cholera antiserum where danger of exposure exists.

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Bovine Mammary Gland Carcinoma

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A case of carcinoma of the bovine mammary gland in a 3-year-old Aberdeen Angus heifer is reported. According to the literature, carcinoma of the bovine udder is extremely rare.

REVIEW OF THE LITERATURE

Feldman¹ says neoplasms are more common in cattle than in horses, or perhaps than in any of the other ruminants. He further states that carcinomas of the mammary gland are common in the human species but extremely rare in the domestic cow. The only cases he found in the literature were one each mentioned by Murray,² Sticker,³ and Cleland.⁴ Tumors are rather common in older animals but most meat-producing animals are slaughtered before the age at which malignant tumors usually develop.

Jackson⁵ states that bovine mammary cancers are exceedingly rare, while most authorities think that they occur frequently in other species. Thus, in the species with the most highly functional mammary gland, udder carcinomas are the least common. Formad⁶ described all the kinds of tumors found in domestic animals but did not mention tumors of the bovine udder. Runnells⁷ makes no mention of neoplasms in the bovine udder and, so far as we know, neither do other textbooks. Davis, Leeper, and Shelton⁸ published data on 90 tumors in cattle, including a 6-year-old cow, of mixed breeding, with a carcinoma of the skin and supramammary region, but apparently with no involvement of the udder. They also reported a keloid in the mammae of an aged Holstein-Friesian cow, but this involved the skin only.

Goldberg⁹ described a case of papilloma of the teat canal of a cow and included a case report on a 2-year-old Holstein-Friesian heifer where the mammary gland was surrounded by edema. On section, the gland was edematous, cystic, and without normal gland tissue. The fat was infiltrated by nests of cells arranged in tubules filled with cuboidal cells. He described several changes in other organs and concluded the case was one of a granulosa cell carcinoma of the right ovary with metastasis in the peritoneum, mammary gland, and the inguinal lymph glands. The neoplasm apparent-

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ly could not be considered as being primary in the udder.

Chambers²⁰ stated that Sticker, in 1902, reported one tumor in the mammary gland of a cow but did not state the kind of tumor or what part of the udder tissue was involved. Hynes²¹ reported a case in a 9-year-old Shorthorn milk cow which had a tumor cavity under the left supramammary lymph node region. It was considered a horn injury but when it did not yield to treatment, material secured by curetting revealed that it was a cancer. On postmortem, it was found that two-thirds of the mammary tissue of the left hind quarter was displaced by the neoplasm which weighed 4 lb. The left supramammary lymph gland was not involved and there was no evidence of metastatic lesions in the rest of the carcass. The neoplasm was described as a firm globular granulation tissue. Milk from the affected quarter, though much reduced in amount, remained apparently normal.

Drabble²² felt that a more extensive use of the microscope in the diagnosis of bovine udder lesions might reveal more carcinomas. He reported 3 cases in which the carcinoma apparently had metastasized into the udder tissue from the skin (1 from the walls of the vulva).

This review of the literature reveals that very little information regarding primary carcinoma of the bovine udder is reported.

REPORT OF CASE AND FINDINGS

A 3-year-old Aberdeen Angus heifer was brought to the clinic of the School of Veterinary Medicine, University of Missouri, on Jan. 17, 1953, because the owner thought she had mastitis. She was due to calve in a month, was in good condition, her appetite was fair, and her temperature normal. The mammary gland was symmetrically swollen, warm, somewhat painful, and uniformly firm, but not hard. A subcutaneous edematous swelling extended forward from the udder on the ventral abdominal wall, similar to that seen in a heavy milking dairy cow about to calve. The secretion from the mam-

mary gland was scant and sterile on culture. Stained smears showed unusually large epithelial cells.

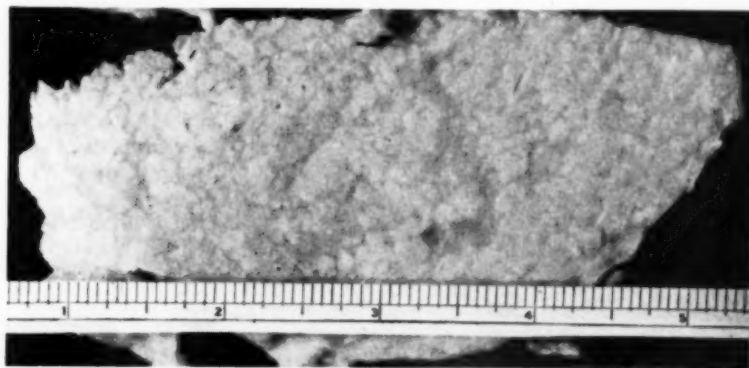
During the next several weeks, the udder became larger and the subcutaneous swelling extended forward to the brisket and into the left flank. The heifer's appetite and her general condition deteriorated. She remained standing for long periods because of the swollen, painful udder. Her temperature fluctuated between 103 and 105 F.

On February 1, she aborted. The uterus did not involute properly and became infected. On February 5, she was moribund and was destroyed. At this time, the udder measured 15 inches dorsoventrally and 15 inches anterioposteriorly.

On postmortem examination, the subcutaneous tissue over the ventral abdomen and thoracic cavity was 6 to 12 cm. thick, due to edema. There was 1 to 2 cm. of subcutaneous edema covering the udder and the skin was stretched taut. It was neither ulcerated nor abnormally adherent to the deeper structures at any point. On cross section, the mammary gland showed edema and accentuation of the interlobular septums (fig. 1). No large neoplastic masses were detected in multiple cross sections. The supramammary lymph nodes measured 12 by 5 cm. They were resistant to cutting and the cut surfaces showed numerous reddish-gray nodules up to 0.5 cm. in diameter. The left prefemoral lymph node was similarly involved (fig. 2).

No metastases to other lymph nodes or viscera were observed. The uterus had not involuted and was filled with a purulent exudate from which *Micrococcus pyogenes* was isolated. A mild catarrhal enteritis was present, as well as a few areas showing

Fig. 1.—The section of udder which has been fixed in formalin shows thickening of the interstitial tissue due to tumor cell invasion of the lymphatic spaces.



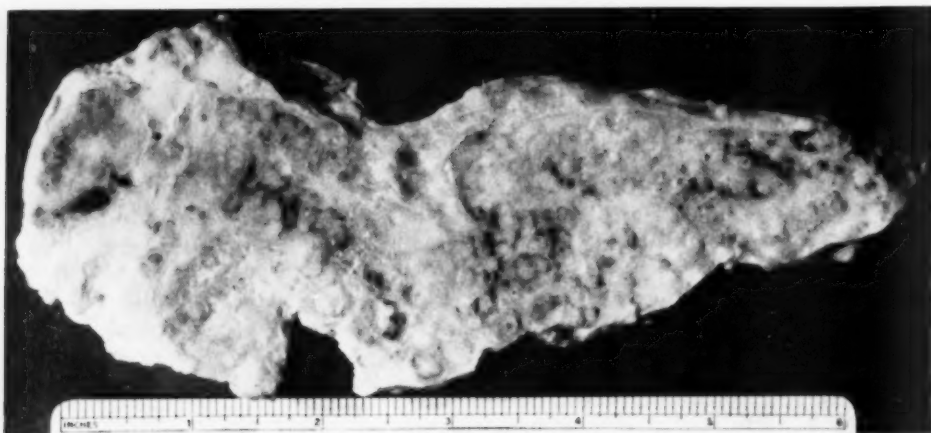


Fig. 2—Formalin-fixed, left prefemoral lymph node. Nodules consisting of neoplasm and hyperplasia of the connective tissue are observed through the node.

telangiectasis in the liver and moderate interstitial emphysema of the lungs.

Microscopically, the tumor was an undifferentiated carcinoma involving, principally, the small ducts. The lymphatic spaces throughout the mammary gland were diffusely permeated by neoplastic cells (fig. 3). Most of the acini were normal and contained normal-appearing secretions; however, a few contained unattached neoplastic cells in their lumens (fig. 4). An occasional duct showed proliferative changes, with

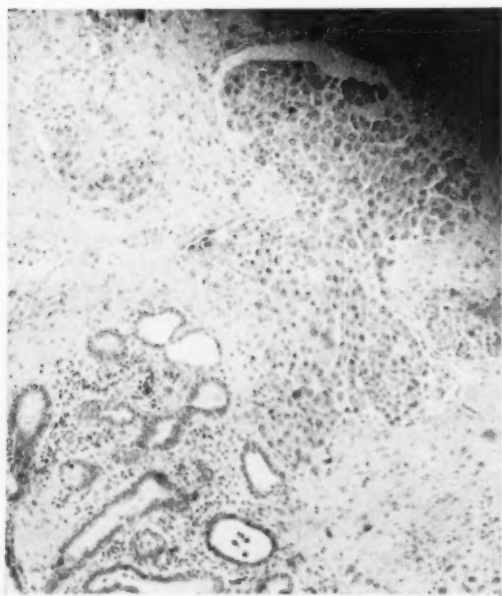


Fig. 3—Mammary gland showing tumor cell invasion of the lymphatic spaces.

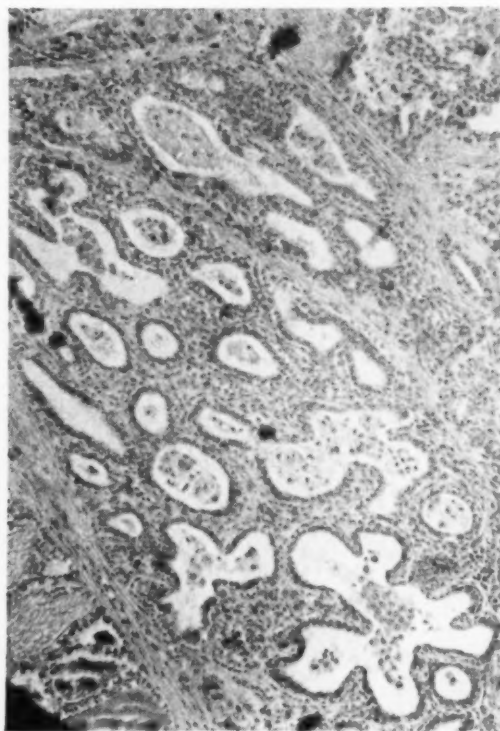


Fig. 4—Mammary gland showing neoplastic epithelial cells in the ducts and lymphatic spaces and proliferation of the duct epithelium.

the production of cells similar to those present in the lymphatics (fig. 5). The tumor cells were polyhedral in shape and several times larger than the normal epithelial cells of the duct. The nuclei were large and vesicular, varied considerably in size, and

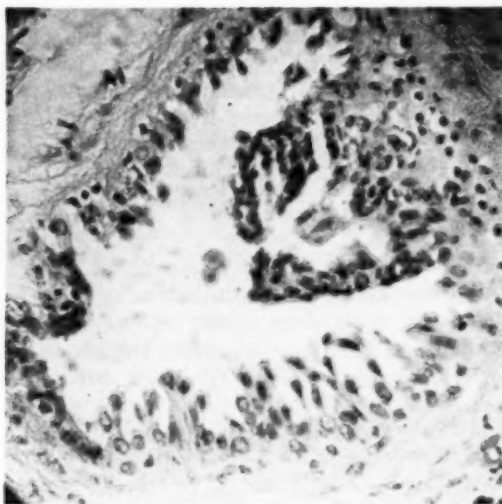


Fig. 5—Duct showing proliferation of the epithelium.

contained one or more nucleoli. The cytoplasm was reticulated and stained only faintly. Mitotic figures were frequent. The interstitial connective tissue was increased in amount and there was a moderate number of lymphocytes concentrated in some areas, especially around dilated lymphatic vessels.

The supramammary lymph node showed permeation of afferent ducts and peripheral sinuses by tumor cells, with associated proliferation of fibrous tissue (fig. 6).

The clinical and pathological findings are analogous to an entity in the human species called "inflammatory carcinoma of the breast (primary type)"¹³ or acute carcinoma, erysipeloid cancer, or carcinomatous mastitis.¹⁴ This lesion is characterized by diffuse permeation of the overlying dermal lymphatic plexus; it may be nodular or it may grow without localized tumor formation,¹⁵ and it spreads rapidly in the superficial lymphatic spaces of the chest wall, producing marked edema. Fever, leukocytosis, and other signs of toxicity commonly associated with inflammation are usually absent. Widespread metastatic involvement of lymph nodes and viscera is common. Pulmonary edema and pneumonia due to lymphatic obstruction are the common mechanism of death.

SUMMARY

A 3-year-old Aberdeen Angus heifer, during the terminal part of gestation, developed an undifferentiated carcinoma in-

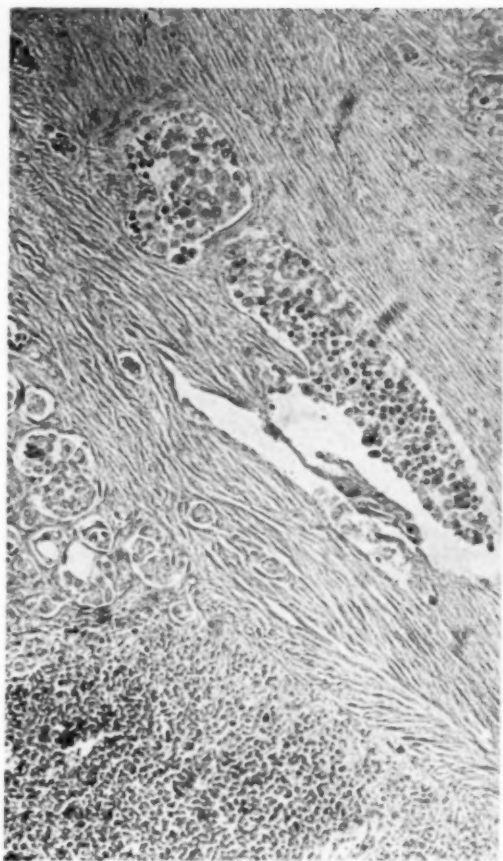


Fig. 6—Supramammary lymph node showing hyperplasia of the connective tissue and tumor cell-permeation of lymphatic spaces.

volving principally the small ducts of the udder. The tumor developed rapidly by diffuse permeation of the lymphatic spaces, simulating an inflammatory process. An analogous neoplasm in woman is called "inflammatory carcinoma of the breast."

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Pullorum disease has hitched a ride in certain fowlpox vaccine, according to the *Farm Journal* (Nov., 1953). In recent weeks the disease has appeared in poultry flocks across the country where it has not been seen for years. They advise producers of hatching eggs to test their flocks, if vaccinated, and to remove the reactors.

Effect of Freezing on Oocysts

Unsporulated oöcysts of three species of ovine coccidia were exposed to temperatures typical of those in the winter on the surface of the ground at Laramie, Wyo. When conditioned by gradually lowering temperatures, they were uninjured by -30 C. for twenty-four hours. They were not appreciably altered by -25 C. for seven days but in fourteen days their viability was reduced by 50 per cent. Many could apparently survive the winters of that region.—*J. Parasitol.*, Oct., 1953.

Protection of Hospital Cases Against Distemper

In reply to a question on the method employed to protect hospitalized dogs against distemper, 82 per cent of 33 New York City veterinarians routinely administer anti-serum to susceptible dogs; only 6 per cent

depend upon isolation and sanitation. Regarding the method used to produce permanent immunity, 9 per cent use two or three injections of inactivated vaccine; 36 per cent use one dose of live virus vaccine; 48 per cent use both of these methods; and 6 per cent use the combination of inactivated and live virus injections.—*Vet. News*, July-Aug., 1953.

Another Look at Brucellosis

Dr. B. T. Simms, chief of the Bureau of Animal Industry, suggests that because of lower returns for livestock products, many beef and dairy cattle herds should now be given a stiff culling. The first animals to go should be those reacting to the brucellosis test. Plan A of the National Brucellosis Program should be recommended to farmers and stockmen in areas where that program is in effect.—*National Brucellosis Committee Release*.

Factors Affecting Closure of Esophageal Groove in the Calf

The effect of various liquids and gelatin capsules on closure of the esophageal grooves of 4 young calves with rumen fistulas was determined at Iowa State College. Until 8 weeks of age, all liquids, whether fed with a nipple pail or an open bucket, caused a complete closure. After eight weeks, open bucket-feeding was less effective but nipple-feeding stimulated closure up to 100 days of age. Water was the first liquid to fail to stimulate closure. Capsules, when given with liquids, passed readily to the omasum but, when given without liquids, they were deposited in the reticulum.—*J. Anim. Sci.*, Nov., 1953.

Viability of the Etiological Agent of Atrophic Rhinitis

Dr. F. W. Schofield, Guelph, Ont., reports that two pens which had housed atrophic rhinitis pigs for one month were sealed for periods of twenty-one and thirty days respectively. Then 3, 7-day-old pigs were placed in each pen and kept under observation for six weeks. They did not develop rhinitis. He believes that the *Pasteurella* organism is involved but that some other factor must also be present.—*Proceedings Book, AVMA*, 1953. *In press*.

Pasteurellosis in Monkeys

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Medical literature within the past few years has called attention to the fact that *Pasteurella multocida* has been isolated from man. Even though this infection in man may be a secondary invader, it is important from a public health viewpoint. Veterinarians are often called to examine and treat monkeys and many people come in contact with these animals at some time during their life. We felt that this report would be of some interest although, to our knowledge, no human being has contracted the infection from this shipment of animals.

Review of Literature.—A short review of the literature is indicated, we believe, to remind investigators of the need for further study of this condition and to encourage the reporting of their findings.

Needham¹ in 1948 reported the isolation of *P. multocida* organisms from 11 patients at the Mayo Clinic. Six of these patients had bronchiectasis. In September, 1952, Morris *et al.*² isolated this organism from cultures of sputum of a 59-year-old white, male veterinarian with bronchiectasis who was a meat inspector in a slaughterhouse. Olsen and Needham,³ again in 1952, reported that in the past five years they have isolated this organism from 37 human patients, of which 27 were either farmers or members of a farmer's family. They report that the organism is usually the predominant pathogen when it occurs in the cultures of bronchial secretions or empyema fluid. It usually occurs in persons who have ample opportunity for contact with infected animals.

O'Connor⁴ reports that monkeys are susceptible to this organism, and Quin⁵ warns veterinarians that pasteurellosis may be a hazard.

History.—A sizable shipment of *Cebus* sp. (ring-tail) monkeys was sent express from Florida to South Dakota at a time of year when the weather in this section of the country was not suitable for such animals. On arrival in Chicago, they were transferred and sent to Minneapolis and then to Sioux City, Iowa, because of snowstorms in South Dakota.

Upon arrival in Sioux City, or shortly thereafter, 2 of these animals were found dead in one box. The container, of wood construction, had a solid bottom and sides, and the top was covered with slats. A notation on the shipping label advised that no food or water was to be given during transportation. In addition to the 2 dead monkeys,

there was a can for watering purposes and two half-frozen oranges. The box contained some form of wild hay for litter. The dead animals were delivered to the laboratory for postmortem examination.

Postmortem Examination.—Both animals were opened in the usual manner to expose the entire viscera intact. The larynx was hyperemic; the trachea contained a large amount of foamy white material; the heart was petechiated; and the lungs showed some congestion and hemorrhage but no pneumonia.

The stomach, liver, pancreas, spleen, and all the intestines in both animals were hyperemic. The urinary systems were normal. The brains were normal except for some yellow fluid which appeared to be excessive in amount. The lesions were indicative of a septicemia.

Laboratory Examination.—Cultures, both anaerobic and aerobic, were made from all of the glandular organs and inoculated on a wide variety of mediums. After incubation at 37 C. for twenty-four hours, the cultures produced a growth of an organism similar, if not identical, to *P. multocida*. These organisms were then transferred to the usual laboratory carbohydrate mediums. The organisms fermented glucose, sucrose, xylose, and mannite with the production of acid but no gas.

Direct microscopic examination of the blood smears showed a bipolar staining organism.

Examination for blood parasites was negative, as was the flotation method for intestinal parasites.

Cultures inoculated into mice, guinea pigs, and pigeons produced death in all injected animals within thirty-six hours. The same organism was then recovered from each of the experimental animals and again produced typical growth on laboratory mediums—thus proving Koch's postulates.

Unfortunately, only 2 animals were submitted for examination. No information was available regarding the balance of the shipment.

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The author thanks Dr. R. A. Packer, professor of veterinary hygiene, Iowa State College, Ames, for confirming the findings.

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The Role of *Pasteurella* in Atrophic Rhinitis of Swine

Pasteurella multocida, type B, has been suggested as a probable factor in producing atrophic rhinitis in swine. In a series of 11 experiments from April to October, 1953, the Animal Disease Research Institute, Hull, Que., was able to reproduce the disease repeatedly. Most of the 85 pigs, 4 or 5 days old, given infective material, intranasally, daily for five days, developed lesions. Many inoculations were with a 7-month-old *P. multocida* culture, some of which had been passaged through 1 pig and 4 rabbits. Curettings or culture fresh from 6 field cases were also used.

In one experiment, *P. multocida* isolated from the lung of a pig which seemed free of rhinitis produced typical rhinitis in baby pigs. In four experiments, only 3 of 20 pigs given *Pasteurella* antiserum intraperitoneally seemed to be protected against intranasal inoculation.—*Canad. J. Comp. Med.*, Nov., 1953.

Ovine Johne's Infection in Cattle

British veterinarians infected young calves with Johne's disease by intravenous inoculation with two strains of organisms recovered from infected sheep. One strain was from Iceland, the other from Britain. The latter is a strongly pigmented organism which regularly produced orange-colored lesions in the intestines. Both strains produced typical symptoms and lesions in the calves.—*J. Comp. Path. and Therap.*, Oct., 1953.

Anaplasmosis in Australia

The first clinical case of anaplasmosis on the continent occurred in New South Wales in December, 1949. A Jersey cow showed jaundice and hemoglobinuria (unusual) and died the third day. She showed general icterus and hypertrophy of the spleen. Blood smears revealed numerous *Anaplasma marginale* but no *Babesia* spp. The vector tick, *Boophilus microplus*, was

found in 2 of the remaining 191 animals in the herd. No further cases occurred.—*Austral. Vet. J.*, July, 1953.

Bovine Leptospirosis in Georgia

The Tifton (Ga.) Diagnostic Laboratory reports that bovine leptospirosis is being recognized more frequently in that area. Of 150 blood samples submitted by veterinarians in six weeks, 65 from 19 herds were positive. The organism was isolated from 1 of several calves that died in one herd. Since isolations are difficult, it is recommended that either the affected animals be brought to the laboratory in the acute phase for necropsy and guinea pig inoculation or the guinea pigs be taken to the farm and inoculated intraperitoneally with urine of acutely infected animals. There were many abortions and deaths of young calves in the affected herds.—*The Georgia Vet.*, Nov.-Dec., 1953.

Are Pigskins Punted?—The Cattleman (Nov., 1953) says that footballs are covered with top quality steer hide. The word "pigskin" is a holdover from prior to 1889 when inflated pigs' bladders were used.

Eperythrozoonosis in South Africa.—*Eperythrozoon parvum* was found in a splenectomized pig at Onderstepoort (South Africa). *Haematopinus suis* was the probable vector.—*Vet. Bull.*, Sept., 1953.

Transmissible Gastroenteritis Test

A serum neutralization test for transmissible gastroenteritis of swine is reported (*Cornell Vet.*, Oct., 1953). It is based on *in vitro* neutralization of the virus by convalescent serum from the dam of the pigs showing symptoms of the disease. A serum sample taken early in the acute phase must be negative while serum taken later must be positive. Disease-free, 5-year-old pigs are used for test animals. This test is not practical for routine diagnosis but should be useful in research and in developing a more economical test.

Congenital toxoplasmosis in two infants is reported. It is believed that infection was transferred to the mother from a dog in 1 case and placenta involvement was demonstrated in the other.—*J. Am. M. A.*, Dec. 5, 1953.

Bovine Pasteurellosis in Southern Iowa

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Milo, Iowa

IN SOUTHERN Iowa a complex and sometimes baffling entity, which has scant resemblance to shipping fever, is diagnosed as bovine pasteurellosis. Granted there is little agreement regarding the etiological role of *Pasteurella bovisepctica* in the manifold conditions from which it may be isolated, the author and colleagues in nearby communities have had this organism identified from so many cases presenting a certain syndrome that laboratory confirmation is no longer considered necessary in establishing a diagnosis of pasteurellosis.

In the majority of cases, there is little reason for confusing this disease with shipping fever. The most common and most important form of pasteurellosis as it occurs in this region is primarily a pulmonary infection. It appears in native cattle of all ages, in all seasons, and without a history of factors predisposing to disease. Clients usually report these cattle as "puffing." Examination reveals a temperature of 103 to 108 F. and an acute dyspnea with a peculiar jerking manner of respiration reminiscent of a horse with heaves. The patients are not depressed but instead are often hypersensitive; they may be aggressive and their appetites may be unimpaired. Treatment often causes embarrassment since restraint and medication may aggravate the symptoms. Chemotherapeutic agents and antibiotics are ineffective. *Pasteurella* antiserum seems to be effective either as a prophylactic or a therapeutic agent in some cases but apparently in neither capacity in other cases. This could be because of a difference in the strain of the responsible organism. The response to prophylactic bacterins is unpredictable, varying from satisfactory to negative.

In addition to the pulmonary cases, estimated at 60 per cent, perhaps 15 per cent develop an encephalitis and 25 per cent occur as acute septicemia cases. The total number of cases seen will probably average about 25 per year.

Table 1 is an outline of the clinical differences between shipping fever and the pul-

monary form of pasteurellosis as encountered in this locality.

TYPICAL CASE REPORTS

Case 1 (August, 1949).—A client reported pneumonia in 2 of 11, 250-lb. calves in a pen. The weather was clear and dry, the housing conditions excellent. The calves showed acute dyspnea, hypersensitivity bordering on aggressiveness, and temperatures of 105 and 106 F. A mixture of three sulfonamides was administered orally and 100 cc. of *Pasteurella* antiserum subcutaneously; the remaining 9 calves were each given 50 cc. of the serum. With no improvement by the third day, penicillin-streptomycin therapy was instituted.

Two more calves became ill on the fourth day and eventually all 11 calves were affected. One died on the fifth day and by the tenth day, 8 were dead. Necropsy of the first to die revealed hemorrhages in the heart, lungs, and subcutis, some congestion and consolidation in the lungs, and extensive pulmonary emphysema. Specimens yielded organisms resembling *Past. bovisepctica*. The others showed the same pathological changes. Three calves apparently recovered but within a month these sickened again and died.

Case 2 (September, 1952).—A client reported "lung trouble" in 1 of 6 home-raised, short yearling dairy heifers. She was hypersensitive, had a temperature of 106 F., acute dyspnea, and some appetite. Intravenous sulfamerazine the first day, and sulfathiazole given orally the second day, brought no response. On the third day, with 2 more heifers affected, the 3 were given terramycin® intravenously. By the fourth day, all were puffing except the first heifer which had developed encephalitis and died. Necropsy revealed hemorrhages in the lungs, heart, and subcutis, some lung congestion and pulmonary consolidation, plus extensive pulmonary emphysema. The laboratory reported an organism resembling *Past. bovisepctica*. The 5 surviving heifers were given antiserum and all recovered. On Nov. 9, 1953, another case developed on this farm; the third recurrence in five years.

Dr. Graham is a general practitioner in Milo, Iowa.

Case 3 (December, 1951).—Another client reported illness in 1 of his heifers. Her symptoms resembled those described in the above cases. She failed to respond to sulfonamide and antibiotic medication, was hypersensitive, and was restrained with difficulty. On the third day she died. Necropsy showed hemorrhages in the lungs, heart, and subcutis, some congestion and consolidation of the lungs, and extensive pulmonary emphysema. The laboratory reported an organism resembling *Past. bovis-septica*. A similar case, developing a week later, was given antiserum daily for three days. On the second day, hypersensitivity had diminished and the animal recovered.

DISCUSSION

The gross lesions, especially the hemorrhages in the thoracic viscera and the pulmonary emphysema, and the laboratory finding of organisms resembling *Past. bovis-septica* were so consistent in these puffing, hypersensitive, native cattle, that a diagnosis of pasteurellosis is now made in such cases without a laboratory check, and all therapy except *Pasteurella* antiserum has been abandoned.

A minor portion of these cases of bovine pasteurellosis occur as a pure encephalitis. Clients may report 1 or more cattle of any age going mad. Ordinarily, the animals are stricken with encephalitis without an observed illness. The course is rapid, the mortality high, and the patients usually dead before the veterinarian arrives. Many become aggressive, attacking any moving objects, while others crash into anything in their path.

Necropsies may show only encephalitis and a few hemorrhages on the heart. In any season, the pulmonary form may terminate in encephalitis. In warm weather, farmers are apt to dismiss dyspnea as simply a

reaction to the heat, so cases with a history of encephalitis may prove, upon necropsy, to have been pulmonary cases primarily.

Uncomplicated encephalitis cases are not common. The author has observed recovery from such following serum therapy and a few recover spontaneously. While the etiology of encephalitis cases which recover may be a matter for conjecture, it is not unreasonable to suspect *Past. bovis-septica* if that organism has been recovered from similar cases on the same farm.

Perhaps 25 per cent of these cases of bovine pasteurellosis seem to be septicemic in nature. Affected animals are found dead or prostrate, with death soon ensuing without a struggle and with no evidence of encephalitis. The course of this condition apparently is almost as short as in fowl cholera where hens are found dead in the nest. Autopsies show hemorrhages in the subcutis, in the heart, lungs, and serous and mucous membranes. In some herds, only 1 animal may be affected and cases may continue to appear for weeks. Prophylaxis in these herds is difficult. Due to the short protection, if any, afforded by *Pasteurella* antiserum some attempts should be made to stimulate an active resistance. In some herds, commercial bacterins do not seem to generate this resistance, even when injections are repeated weekly for three or four doses. Dr. J. W. Winters of Norwalk, Iowa, has tried pooling several different commercial brands of bacterin for use on farms where this condition is enzootic. If this fails, autogenous bacterins have sometimes given encouraging results.

Bovine pasteurellosis may occur concurrently with outbreaks of shipping fever and never be differentiated clinically. A certain percentage of cases with primary lung involvement will not develop the distinguish-

TABLE 1—Clinical Differences Between Shipping Fever and the Pulmonary Form of Pasteurellosis

Shipping fever	Pasteurellosis
1. Cattle often have been exposed in shipping or in sale barns.	1. No history of predisposing factors: home-raised cattle affected.
2. Seasonal, mostly in young cattle.	2. Occurs in all seasons and all ages.
3. Biological agents not prophylactic.	3. Antiserum often protective.
4. Animals depressed.	4. Animals may be hypersensitive.
5. Appetite impaired.	5. Animals usually eat.
6. Dyspnea mild or variable; characteristic soft cough.	6. Acute dyspnea due to pulmonary emphysema; animals puff.
7. Condition yields to sulfonamides and antibiotics.	7. Sulfonamides and antibiotics of no value.
8. <i>Pasteurella</i> antiserum no help.	8. Antiserum sometimes effective.
9. Majority recover; a few terminate in fatal pneumonia.	9. Prognosis unfavorable, may terminate in encephalitis; necropsies show pulmonary emphysema.
10. May occur anywhere in exposed cattle.	10. Sporadic; enzootic on certain farms; never occurs on others.

ing pulmonary emphysema. Such cases would not respond to sulfonamides and antibiotics, so a favorable response to Pasteurella antiserum, after all else had failed, would suggest that these were truly cases of pasteurellosis. These may constitute a considerable percentage of the small number of shipping fever cases which do not yield to routine treatment.

SUMMARY

A disease diagnosed as pasteurellosis appears sporadically in native cattle in all seasons on certain farms. The most important form involves the lungs primarily, producing a dyspnea and a peculiar manner of breathing which, with their hypersensitivity and lack of response to sulfonamides and antibiotics, sets this animal apart from ordinary cases of shipping fever or pneumonia.

Uncomplicated encephalitis and septicemia constitutes a smaller portion of these cases.

Probably a certain fraction of the animals with shipping fever which fail to respond to routine treatment are true cases of pasteurellosis which have not developed the characteristic identifying symptom.

Prophylaxis in all forms is difficult. Response to treatment with Pasteurella antiserum varies from satisfactory to negative.

Crystal Violet Hog Cholera Vaccine

In Britain where swine fever is controlled and the only vaccine allowed is crystal violet vaccine, a recent epizootic threatened to exhaust the supply. It was reported that a smaller dose than is used subcutaneously would confer an even stronger immunity if given intradermally in the tip of the ear. Research on modified rabbit or goat origin vaccine was also reported. Tests indicated that, in healthy pigs, this vaccine would produce only a mild reaction, then a solid immunity, but in pigs even slightly below par, reactions were often severe and losses high.—*Vet. Rec., Oct. 31, 1953.*

New Virus from Canadian Ducks.—Ducklings in Manitoba displayed paralytic symptoms resembling Newcastle disease and sinusitis. An agent obtained from the tissues passed a medium, but not a fine, Berkefeld filter. It failed to produce infec-

tion in fowl and ducks but developed antibodies which would neutralize the agent but not Newcastle disease virus.—*Vet. Bull., Sept., 1953.*

Experimental Erysipelas Arthritis

Repeated intravenous injection of *Erysipelothrix rhusiopathiae* in healthy pigs produced a chronic proliferative arthritis in all of 16 pigs without any symptoms of acute infection. Once produced, attempts to destroy the joint infection with antiserum, penicillin, or chloramphenicol were unsuccessful. Nor did treatment with cortisone improve the condition.—*Vet. Rec., Oct. 31, 1953.*

Bovine Parasitism Increasing

Internal parasitism is especially serious in young cattle in the southern states, where there is little or no freezing, according to the Diagnostic Laboratory, Tifton, Ga. In one herd, with 300 animals grazing 2,000 acres of land, all deaths occurred in a pasture with a large pond surrounded by a boggy area. Necropsy of 1 calf revealed over 400,000 *Trichostrongylus axei*, a species seldom found in cattle. Another calf harbored 291,000 *Ostertagia ostertagi* and 36,000 *T. axei*.

In other cases, many thousands of various species of Cooperia were also found. Most of the infected herds had been treated with phenothiazine one or more times, with only slight temporary relief.—*Georgia Vet., Nov.-Dec., 1953.*

Penicillin for Erysipeloid.—The commonest form of erysipeloid in Maine fishermen is on the hand. It causes itching, pain, and a high fever. It appears as a smooth, circumscribed, more or less edematous plaque, which slowly extends over the fingers and up the wrist, usually on the dorsal surface only. Treatment with sulfonamides were of little value but 300,000 units of penicillin, intramuscularly, on two or three successive days with neomycin sulfate locally will, in 90 per cent of the patients, relieve the symptoms in not more than three days. The fish are not diseased, the organism being a saprophyte in their body slime.—*J. Am. M. A., April 25, 1953.*

Nerve Trunk—Pathway for Infection

Neural lymphatics apparently do not provide centripetal transmission to toxins or viruses as has long been believed. However, tissue spaces between the nerve fibers could serve as conduits and muscle pressure could propel the fluid. Radioactive materials can be demonstrated ascending motor nerve trunks but not in sensory nerves. This evidence is still only circumstantial.—*Vet. Bull., Nov., 1953.*

Tetracycline, a new antibiotic, prepared by the chemical modification of chlortetracycline (aureomycin) has a broad spectrum similar to that of chlortetracycline and of oxytetracycline (terramycin®).

Psuedopoliomyelitis of Animals.—The neurotropic diseases of domestic animals which might be considered analogous to poliomyelitis in man include mouse encephalomyelitis, Teschen disease of swine, and canine distemper.—*Vet. Bull., Nov., 1953.*

For bluecomb, Michigan State College poultrymen recommend a ten-day treatment with 1 level teaspoon of potassium dichromate per 4 gallons of drinking water, and 4 per cent dry molasses added to the mash.—*Feed Bag, Oct., 1953.*

Shipping fever calls usually come about six days after cattle have passed through the stockyards. Pasteurella antiserum is used for prophylaxis but it must be repeated in four or five days.—*S. S. Bjornson, D.V.M., Union Stock Yards, West Fargo, N. Dak.*

Pullorum Testing of Turkeys.—The institute of American Poultry Industries reports that 801,839 turkeys were tested in four months, from July through October, which was a 21 per cent increase over 1952.

Feeding Roughage to Hogs

Although the hog's stomach is not built to handle much roughage, hogs do well on a ration containing 15 per cent of alfalfa. A ration for bred gilts may well contain from 8 to 10 lb. of alfalfa-brome silage per head per day up to three weeks before

farrowing. It can be fed as hay in low bunks or it can be ground and fed with the grain ration.—*Successful Farming, Dec., 1953.*

Mouse Test for Brucellosis Immunity in Cattle.—Mice can be protected against a lethal dose of *Brucella abortus* with serum from infected or vaccinated cattle. By varying the dose of serum and of the challenging culture, a standard test for measuring the resistance of cattle might be developed.—*W. H. O. Release, Sept., 1953.*

Penicillin for Blackleg in Sheep

When sheep were infected, intramuscularly, with *Clostridium chauvoei* culture, they were protected by 100,000 units of calcium penicillin if it was given at the time of infection, but 300,000 units were required if it was given six hours later.—*Vet. Bull., Nov., 1953.*

Girth Measurement Indicates Weight.—Modern data proves that the old fashioned girthing chain actually has been an accurate method of estimating an animal's weight; more so than any other body measurement. Tables are available to give the weight per inch of girth.—*Agric. Res., Nov., 1953.*

Tuberculosis in Goats.—When a 3-month-old kid died of tuberculosis, the herd of 76 was tested. Of the 41 reactors slaughtered, 32 showed microscopic lesions.—*Vet. Rec., July 4, 1953.*

Psittacosis in parakeets in Southern California is quite common. In pigeons, ducks, and other birds, it is called ornithosis. In man, it causes a highly fatal pneumonia. Being a large virus, it does respond to antibiotic therapy.—*W. A. Hagan, D.V.M., Ithaca, N. Y.*

Polled Cattle Popular.—Top prices, at recent sales, were realized when, in California, 58 Polled Herefords sold for an average of \$1,468, the top 10 averaging \$4,150, while in Illinois, 61 head of horned Herefords averaged \$1,154, with the top 10 averaging \$3,245.—*Am. Hereford J., Nov. 15, 1953.*

Oöphorectomy and Breast Cancer.—Oöphorectomy alone may not reduce the incidence of recurrence of breast cancer but, with androgens or estrogens, it has in some instances checked the disease or caused complete regression.—*J. Am. M. A.*, Nov. 28, 1953.

Penicillin is ineffective in the prevention or therapy of shipping fever. The long-acting varieties failed to prevent infection and no variety appeared to affect the course of the disease.—*S. S. Bjornson, D.V.M., Union Stock Yards, West Fargo, N. Dak.*

Sanitation and Crushed Ice.—A study of crushed ice indicated that undesirable bacteria were often introduced in dispensing it. This can be overcome by pouring over the crushed ice cold water containing 2 parts per million of a sodium hypochlorite solution sufficient to cover the ice. The excess liquid can be poured off as the ice is used. Usually, no objections were raised by those serving the ice.—*Am. J. Pub. Health*, Oct., 1953.

Antibiotic ice for preserving food was suggested by the American Chemical Society at a recent Chicago meeting. Of the antibiotics investigated, chlortetracycline (aureomycin) and terramycin® were most effective for flesh foods (fresh fish) and streptomycin for green leafy vegetables. One part of antibiotic in 1,000,000 parts of ice flakes will help prevent bacterial spoilage and lengthen the storage life of foods.—*J. Agric. and Food Chem.*, Sept. 15, 1953.

Transplacental transmission of western equine encephalomyelitis in 5-day-old twin girls is reported. The mother, who had mild symptoms the day before delivery, had been severely bitten by mosquitoes nine days previously.—*J. Am. M. A.*, Oct. 10, 1953.

Respiratory infections in man were treated with antibiotics and with aspirin during an epidemic in early 1953. Of the 150 patients treated, 54 were given aspirin, 76 terramycin®, and 20 erythromycin. Temperatures returned to normal in thirty hours with aspirin but in forty-one and forty-two hours, respectively, with the antibiotics which apparently were of no benefit.—*J. Am. M.A.*, Sept. 26, 1953.

Penicillin and Gosling Growth

Six equal groups of baby goslings were given the same basal diet, some with supplements, for eight weeks. At the end of two weeks, penicillin supplement had, in the males, produced a significant increase (7.2%) over basal and (8.9%) over basal plus grain ration, but no increase over the basal plus grass ration. At 4, 6, and 8 weeks of age, gains showed the same tendency but not in a significant proportion. At no stage was there significant gains in the females.—*Poult. Sci.*, May, 1953.

Cattle given male hormones gained more rapidly, in an experiment at Oregon State College, than did untreated cattle. Gains were increased 14 per cent in steers, 25 per cent in heifers. The feed efficiency increased but, because more protein than fat was produced, the beef was tougher.—*Feed Bag*, Oct., 1953.

Virus Zoonoses in Canada.—The most important virus diseases of domestic animals which are, or recently have been, present in Canada and which are transmissible to man include the pox diseases, rabies, Newcastle disease, equine encephalomyelitis, and foot-and-mouth disease.—*Canad. J. Comp. Med.*, Sept., 1953.

Antihistaminic drugs were found to cause personality changes in many children. Teachers reported lack of interest, temper outbursts, crying spells, or antagonism, which would disappear within a day or two when the drug was discontinued. When they had to be resumed, behavior symptoms reappeared.—*Ann. Allergy*, May-June, 1953.

Listeriosis of Sheep.—Listeriosis, a slowly developing disease, affected one flock of sheep in North Dakota in 1943. By 1952, 12 flocks had been infected by purchases from the original flock. Vaccination with an experimental bacterin reduced the death loss from induced infection from 80 per cent to 40 per cent.—*D. F. Eveleth, D.V.M., Fargo, N. Dak.*

Terramycin® ointment has proved to be a satisfactory substitute for silver nitrate in preventing infection in the eyes of newborn infants.—*J. Am. Pharm. A.*, Sept. 19, 1953.

NUTRITION

Evidence of a New Growth Factor

The growth stimulation resulting from the feeding of antibiotics has been considered as probably due to the indirect effects on the intestinal microflora. Research with chlortetracycline (aureomycin) on the growth of pigs at Iowa State College suggests that the benefits may come from stimulating the action of the fungus, *Aspergillus flavus*, which is normally present in the intestinal tract. This fungus increases in the intestines of test pigs; furthermore, broth cultures of *Aspergillus* added to the ration significantly stimulate growth.—*J. Agric. and Food Chem.*, Nov. 11, 1953.

Feeding Spanish Moss for Estrogen.—Experiments on rats indicate that Spanish moss contains considerable estrogen. Because of its fiber content it would not be digested by swine but would be by ruminants. Spanish moss also contains considerable carotene and has more total food value than oat straw.—*Science*, Nov. 20, 1953.

Apples as a pig food may have no place in the fattening ration but can be fed in large quantities without producing toxic effects.—*Brit. Vet. J.*, Nov., 1953.

Antibiotic Levels and Chick Growth

An attempt was made to learn why antibiotics varied as growth stimulants for 4-week-old chicks. After being starved for twenty-four hours, each chick was given a 40-mg. capsule of crystalline antibiotic. Four hours later they were destroyed, the gastrointestinal tract removed in segments, and the antibiotic content determined for each segment as well as for the droppings. The percentages of the antibiotic dosage found in the entire tract was as follows: chlortetracycline (aureomycin), 9.6; chloramphenicol (chloromycetin®), 4.2; procaine penicillin G, 7.7; oxytetracycline (terramycin®), 19.3.

However, in the small intestine and cecum, where they would be most effective,

the percentage present was chlortetracycline, 6.0; chloramphenicol only 0.87; penicillin, 3.9; and oxytetracycline, 14.0. The fact that chloramphenicol is absorbed rapidly may explain why it has not been found active as a growth stimulant.—*Poult. Sci.*, 1953.

Vitamin A Intoxication.—A 52-year-old woman who had been taking 100,000 units of vitamin A daily for four years because of a skin condition was experiencing insomnia, loss of scalp hair, hemorrhage from mucous membranes, and headache. The patient was completely relieved of most of her symptoms within a few months after vitamin A therapy was stopped.—*J. Am. M.A.*, Aug. 8, 1953.

Waste Beef Fat in Swine Rations

In 2 trials with 17 hogs, 10 per cent of a coarsely ground waste beef fat was substituted for corn in a well-balanced diet. It resulted in a daily gain of 1.3 lb., with 404 lb. of food required for a 100-lb. gain, while the pigs on the basal ration gained 1 lb. daily and required 493 lb. of food for a 100-lb. gain. Dressing percentage of both was about 77 per cent but the thickness of the back fat was 1.64 in. for the fat-fed pigs and 1.55 in. for the others.—*Am. Feed Mfr. A. Nutr. Abstr.*, Sept., 1953.

Livestock Nutritionist Honored

Dr. Damon V. Catron of Iowa State College received the 1953 American Feed Manufacturers Association \$1,000 award for animal nutrition research. He was cited for his valuable contributions to research on antibiotics and vitamin B₁₂ and for the development of substitutes for sow's milk in baby pig nutrition. He served as a member of the feed survey committee of the American Feed Manufacturers Association for several years.

EDITORIAL

Needed Livestock Disease Reports Now a Possibility

Since the veterinary profession is on the front line of defense against the nation's livestock disease invaders, it should, like a general staff preparing defenses against enemy attack, know as much as possible about the invaders strength, distribution, and weapons. While plausible estimates about the diseases of man can usually be provided by the National Office of Vital Statistics, U. S. Department of Health, Education, and Welfare, the estimates on diseases of livestock are often not so plausible.

The excellent, recently published text, "Advances in Veterinary Science," by Brandy and Jungherr, presumably quoting the best available sources, cites some debatable disease statistics. It gives the total value of all livestock in the United States in 1947 as \$11.2 billion, then quotes 1948's estimated losses from several livestock diseases, including impaired fertility of cattle—\$828 million; bovine mastitis—\$140 million; bovine brucellosis—\$92 million; Johne's disease—\$1 million; and bovine shipping fever—\$1 million.

In commenting on these data, we do not mean to be critical of those who compiled them because we realize how difficult it is to get such information. However, we do believe that some of these estimates are grossly inaccurate.

Would the loss from infertility be apt to be six times as great as the loss from mastitis, nine times as great as from brucellosis, and 828 times as great as from shipping fever?

Actually, the loss from shipping fever in 1948 probably was not more than 10 to 20 per cent of what it has been since 1950. However, even after adjusting for the shipping fever increase, the ratio of these loss estimates would still be perhaps 100 to 1 for recent years.

How are such estimates made? We can only surmise, but realizing that infertility is often an occult condition which could profit from some emphasis, perhaps this is what happened: Probably the maximum figurative losses sustained from temporary,

or longer, infertility in a few dairy herds was estimated, the total divided by the number of cows in those herds and multiplied by the number of cows in the nation. Actually this \$828 million loss would, in 1948, have been an average of over \$21 for every beef and dairy female over 2 years of age.

On the other hand, the losses from shipping fever being more obvious and the disease not being a threat to human health, it seldom reached public attention.

WHO PROVIDES THE STATISTICS?

The Bureau of Animal Industry has been and should be considered the logical source of statistics on animal disease morbidity and mortality. However, despite repeated and concerted urgings from the AVMA, the U. S. Livestock Sanitary Association, and the war-time Committee on Animal Health of the National Research Council, the funds were never made available for a division of vital statistics as recommended by the aforementioned agencies.* The Bureau has favored provisions for this activity which is so obviously essential to the most intelligent direction of disease control and research activities.

Consequently, as Dr. B. T. Simms has frequently stated, many of the Bureau's estimates of disease losses have been and can be "nothing more than informed guesses." Accurate statistics on bovine tuberculosis and brucellosis are computable from available testing records, and close estimates on the losses in calf and milk production from brucellosis can be made from other accumulated data. Dr. Simms adds that for rabies, equine encephalomyelitis, and anthrax, the Bureau attempts to secure reports from which informed estimates can be made; also for pullorum disease.

However, the Bureau has little informa-

*Particularly noteworthy is the report of the AVMA Special Committee on Vital Statistics for 1944 (see JOURNAL, Nov., 1944, pp. 331-334); the report of the National Research Council's committee (see JOURNAL, Oct. 1946, pp. 268-272); and the reports of the Committee on Morbidity and Mortality of the U. S. Livestock Sanitary Association for 1946 and subsequent years.

tion on the incidence of other infectious diseases and even less on sporadic diseases. They, therefore, often must pass along the estimates of others.

FINALLY A PROGRAM

The U. S. Livestock Sanitary Association also has, for many years, advocated a nation-wide program of livestock disease reporting. Finally at Toronto last July, the Committee on Morbidity and Mortality, under the leadership of the late Dr. C. E. Wicktor, decided to launch such a program, hoping that it will eventually merit federal support. Dr. R. A. Hendershott, secretary of the U.S.L.S.A. has been assigned the task, temporarily at least, of securing information on diseases from the state veterinarians of the 48 states, compiling same and promptly reporting the totals to officials of the federal government and of the co-operating states. This is indeed a commendable venture which deserves the active support of everyone interested in our national livestock welfare.

Obviously, this program can not succeed unless it enjoys the active coöperation of individual practitioners, veterinary hospitals, diagnostic laboratories, college clinicians, and others who must fill out the necessary reports. Because of their vital interest in such statistics, we anticipate a high degree of willing participation all along the line. Nevertheless, these reports at best may often be fragmentary because so many diseases exist and losses occur unknown to veterinary personnel.

Most veterinary college clinics, and many state and other diagnostic laboratories have for years periodically published reports. Also a few independent associations have at times attempted to compile and publish such data on a limited basis.

At present, several states have inaugurated commendable state reporting systems. Dr. James R. Hay, state veterinarian of Ohio, reports that their animal disease reporting program was launched in January, 1953, as a coöperative effort of the Ohio Division of Animal Industry, the Ohio Department of Health, and the U. S. BAI. Each practicing veterinarian is sent a card twice a month, on which are listed 16 common diseases: seven zoonoses, seven other infectious, and two noninfectious conditions. The practitioner is to add the names of other current diseases and state the

number of times each has been encountered. The reports are then compiled and published monthly as "Animal Disease Trends," a pamphlet which is circulated among all of Ohio's veterinarians and county agents, to the regulatory officials of all states, and to others. More than half of Ohio's 710 practitioners have coöperated regularly.

THE PROPOSED REPORT SHEET

The U.S.L.S.A. report sheet lists 39 diseases about which data are desired, including several infectious diseases which are rarely if ever present in this country. The list follows:

anaplasmosis	infectious equine
anthrax	anemia
atrophic rhinitis	Johne's disease
bacillary hemoglobinuria	leptospirosis
blackleg	leukosis
bluetongue	listeriosis
brucellosis	malignant catarrhal fever
chronic respiratory disease	Newcastle disease
coccidiosis	psittacosis
contagious ecthyma	rabies
contagious pleuropneumonia	rinderpest
dourine	scabies
equine encephalomyelitis	scrapie
foot-and-mouth disease	swine erysipelas
fowlpest	texas fever
glanders	trichomoniasis
hog cholera	tuberculosis
hyperkeratosis	tularemia
infectious bronchitis	vesicular exanthema
	vesicular stomatitis
	vibriosis

At the risk of becoming cumbersome, would it not be well to considerably extend this list? From the viewpoint of sanitary and public health officials, the list may be highly satisfactory but from the viewpoint of practical veterinary medicine it falls considerably short of that. Many common diseases, especially noninfectious conditions, are omitted regardless of their importance.

State officials, of course, could add or deduct as many items as they wished on the questionnaire lists sent to the practitioners and to others in their state. However, we believe that if coöperation is expected from the practitioners, the list must contain the diseases on which they would like to report. Among the present important omissions are shipping fever of cattle, transmissible gastroenteritis of swine, and typhoid of poultry, to mention only a few infectious conditions. In addition, there is

sufficient interest in other conditions such as urinary calculi, acetonemia, and parturient paresis in cattle, pregnancy toxemia (ketosis) in ewes, and bluecomb in chickens to justify their inclusion. These would be of little use to the enemy in bacterial warfare but the profession certainly needs information about their incidence, location, and seasonal occurrence.

The U.S.L.S.A. realizes that this nationwide disease-reporting venture will need revisions. Perhaps the best method would be for practitioners and others who care to express opinions and offer suggestions to do so through their state veterinary officials.

Dr. I. E. Newsom 1883-1954

Dr. I. E. Newsom, president emeritus of Colorado A. & M. College and former dean of its school of veterinary medicine, died on Jan. 6, 1954, at the age of 70. He had served the college as teacher, dean, and administrator for nearly fifty years. In the last four years, he had performed missions for the Mutual Security Agency, conducting studies on livestock production and disease problems in Europe, Australia, and Formosa.

Born at Colorado City, Texas, April 13, 1883, Dr. Newsom first came to Colorado at the age of 15 to help his father on the family farm near Parker. Soon thereafter he entered Colorado A. & M. College, obtained a bachelor of science degree in veterinary pathology, and then joined the faculty as an assistant instructor. Later, he obtained degrees in veterinary medicine from San Francisco Veterinary College (1906) and from Kansas City Veterinary College (1909). In 1907, Dr. Newsom was appointed assistant professor of anatomy at Colorado A. & M. and, in 1912, was made associate professor of veterinary pathology. He became professor in 1918 and was appointed dean in 1934, succeeding the late Dr. George H. Glover whose protégé he was.

Later, he served the college simultaneously as vice president, dean of veterinary medicine, and dean of the graduate school. He became acting president of the college in January, 1948, and the Board of Agriculture later appointed him president, an office he held until September, 1949. After retirement from active college work, Dr. Newsom continued in modified faculty service, devoting much of his time to writing

and completion of his book on "Diseases of Sheep", a field in which he was an acknowledged authority.



Dr. I. E. Newsom

Dr. Newsom was a member and former officer of the Colorado Veterinary Medical Association, the Conference of Research Workers in Animal Diseases of North America, and the American Veterinary Medical Association, having been a member of the AVMA Executive Board from 1936 to 1941 and its chairman in 1940-1941. He joined the AVMA in 1909. He was also active in Masonic circles, having been master of Fort Collins Lodge in 1911, grand master of the Colorado Grand Lodge in 1928, and commander of Knights Templar in 1926.

He is survived by his widow, Mrs. Dorothy Kick Newsom, Fort Collins, and two daughters, by his first wife, Mrs. R. C. Martin of Evanston, Ill., and Miss Shirley Newsom of Chicago.

An orphan baby raccoon adopted a German Shepherd mother with 7 pups of her own in Des Moines, Iowa. "Ring" romps with the pups.—*Am. Kennel Gaz.*, Oct., 1953.

Annual Cost of Hog Cholera.—According to the *Farm Journal* (Nov., 1953), the average annual cost of keeping cholera out of Canada for forty-eight years has been \$22,122. In the United States, the annual cost of losses plus vaccination is estimated as high as \$50 million. Tennessee is reported to have joined Alabama in outlawing virulent virus.

CURRENT LITERATURE

ABSTRACTS

FOREIGN ABSTRACTS

Myxomatosis in France

The outbreak of myxomatosis in France has been traced to its source. A landowner about 60 miles southwest of Paris obtained this virus to destroy rabbits on his farm. Although this farm was enclosed by walls, the infection has spread rapidly throughout France, and installations of domestic rabbits have been affected, thus endangering this source of meat.

Some large scale vaccinations with the virus of Shope papilloma have been made during recent weeks. This vaccination procedure may prove valuable in domestic rabbit production, but the reservoir of virulent myxomatosis will probably remain in the wild rabbits.

The infection of myxomatosis has now been identified in Belgium, Germany, and Holland.—[G. Ramon: *Epizootic of Myxomatosis in Rabbits in France*. *Bull. Off. Internat. des Epizoot.* No. 9-10, (Sept.-Oct. 1953): 588-600; 601-607.]—J. P. S.

Hazards of ACTH in Race Horses

The authors studied the effects of ACTH on the endurance of white rats in a swimming test. The rats were hampered by weights attached to their tails so that when they could no longer swim they would drown. Whereas the untreated rats would drown after five minutes' exertion in water, the rats having received 1 or 5 units of ACTH could swim for forty minutes before drowning.

In view of the fact that most running horses have an optimum distance in which they give their best performances and that stress has been demonstrated to be related to adrenocortical activity, ACTH was injected into a 6-year-old horse with a good record in the 2,000 meter distance to see if he would stretch it to 2,400 meters. The animal received daily doses of ascorbic acid and potassium chloride for eight days, at the end of which time 1,000 units of ACTH were given intramuscularly. The race took place four hours later. No increase in resistance to fatigue was noticed. Six hours following the race, the animal was found in a state of shock. Edema of the abdomen was very prominent. Oliguria and inappetence were also noted. The administration of large doses of ascorbic acid and potassium salts alleviated the symptoms. The authors point out that horses are very sensitive to ACTH as their

potassium/sodium balance is easily upset and caution should be employed in the use of this hormone in this species.—[G. de Corganoff and H. LeBar's: *Hazards Involved with Corticotropic Hormone Injection in Racing Horses*. *Rev. Path. Gen. et Comp.* (May, 1953): 626-633.]—R.F.V.

Use of Enzymes in Dermatology

The author reports that from cultures of hemolytic streptococci two distinct enzymes can be extracted and separated; streptokinase and streptodornase. Streptokinase activates the plasminogen from serum endoglobulins inducing the formation of plasmin, the hydrolyzing agent of fibrin. Streptodornase (a desoxyribonuclease) depolymerizes the oxyribonucleoprotein fibers of purulent exudates without affecting living cells. These enzymes can induce biological reactions such as leukocytosis and antibody formation.

Clinically, the enzymes are used mostly in the treatment of pleurisy, hemothorax, and ulcers of the skin. The author reports 13 cases of ulcers affecting limbs, which had not been amenable to antibiotic therapy, where the enzymes produced remarkable results. He also employed them in treating infected burns and necrotic anthrax.

He concludes by stating that, while the enzymes alone will not suffice, they make it possible to use more effectively antibiotics and other healing agents by allowing them to penetrate to the seat of the infection.—[R. Weille: *Les Enzymes Extraies des Cultures de Streptocoques Hemolytiques en Dermatologie*. *Rev. de Path. Gen. et Comp.*, 640, (July, 1953): 848-857.]—R. F. V.

Q Fever

This is an excellent historical review of Q fever by the director of the Arloing Institute in Tunis. She describes each major outbreak that has occurred in Australia, America, Europe, Asia, and Africa, giving the symptoms in both man and animals. She concludes that Q fever, like any other zoonosis, rightfully belongs in the field of veterinary hygiene. In her opinion, veterinary health officers have the following responsibilities: (1) the standardization of inspection procedures of animal products; (2) enlisting the coöperation of various organizations such as agricultural associations, medical societies, and other technical groups concerned with hygiene and agriculture; (3) proper reporting and collection of statistical data about zoonoses; and (4) a program of scientific research in the field of public health.—[Mlle. Cordier: *La Fievre du Queensland*. *Rev.*

de Path. Gen. et Comp., 640, (July, 1953):827-843.]—R. F. V.

Rennet in Calf Diarrhea

Excellent results are reported in the treatment of diarrhea of newborn calves. Dry rennet was covered with whey and allowed to stand in a warm place for twelve hours. One feeding of colostrum was withheld from the sick calf and a pint of warm boiled water was substituted. Four hours later, a teaspoonful of the rennet-whey mixture was given in a pint of milk diluted with boiled water.—[P. I. Lysenko, senior veterinarian, Crimean Agric. Admin.: *The Treatment of Colibacillosis of Calves by Dubodko's Rennet Method*. *Veterinariya (Moscow)*, 30, (June, 1953):46.]—R.E.H.

Pleuropneumonic Bodies and Sterility

No pathogenic significance can be attached to several of the pleuropneumonic strains which occur in the genital tracts of cows. However, attention is drawn to the fact that several of these microorganisms deserve further examination with regard to the damage which they might cause, as they appeared to be present in large quantities in certain cases of sterility, or in cases in which deviations in the condition of the genital tract were determined.—[J. I. Teepestra. *On Pleuropneumonic Bodies and Sterility*. *Tijdschr. voor Diergeneesk.*, 78, (Aug. 1, 1953): 617-624.]—L.V.E.

Influence of Iodine on Physiological Activity in Chickens

The influence of iodine, in the food, on the physiological behavior of 1-year-old laying hens has been investigated. The hens were kept in five batteries each supplied with the same "all mash" food of carefully controlled composition. The iodine was given to different groups in excessive quantities of 10 per cent, 5 per cent, and 1 per cent seaweed meal, and a potassium iodide equivalent of 1 per cent seaweed meal. After six months, the body weight of chickens fed 10 per cent and 5 per cent was about 6 per cent lower than that of the controls, but the groups fed 1 per cent of seaweed meal were about 3 per cent heavier than the controls. This difference could not be explained from the data obtained by respiratory metabolism. The metabolic rate was not altered from that of the controls. Egg production was not influenced by the higher iodine supply—in number or in weight.

The hens fed 1 per cent seaweed meal had a shorter moulting period, followed by a more rapid increase in egg production. Very pronounced structural differences in the thyroid gland could be detected. In the normal hens the alveoli were round, filled with colloid, and surrounded by

cubical epithelial cells, whereas, in the experimental animals the alveoli were enlarged, irregular, poorly filled with colloid, and surrounded by flattened epithelial cells. In spite of these important differences, the metabolic rate was unchanged. The iodine content was 903 μ in eggs from hens fed with 10 per cent seaweed, 260 μ in those fed 1 per cent seaweed, and 187 μ in the eggs from hens fed the potassium iodide.

By supplying 1 per cent seaweed meal, the iodine content in the egg should be sufficient for the daily iodine need of adult man. Therefore, it seems not advisable to increase the seaweed meal higher than 1 per cent in the whole ration.—[C. Romijn and W. Lockhorst. *The Influence of Iodine on Physiological Activities of Chickens*. *Tijdschr. voor Diergeneesk.*, 78, (May 1, 1953): 369-392.]—L. V. E.

Gastroenteritis in Swine

A great number of vibrios were found in the intestines of 10 piglets coming from eight farms in the province of Overysel (Netherlands). The pigs had died from a rather serious hemorrhagic gastroenteritis. The question is asked whether latent infections with the "vibrios" (or possibly other infectious agents) occur in pigs in the Netherlands or if only nutrition plays a part in these cases of gastroenteritis. It is often observed that pigs die suddenly, showing symptoms of diarrhea, often bloody, after a change in nutrition or after an external stimulation.

Out of a total of 454 pigs examined postmortem, one-third revealed some form of gastroenteritis (most often of a hemorrhagic character), while no specific bacterial or parasitic cause could be identified.—[F. W. Van Ulsen: *About Gastroenteritis in Swine*. *Tijdschr. voor Diergeneesk.*, 78, (July 1, 1953): 560-568.]—L.V.E.

Prevention of Brucellosis

The author describes a serial investigation of milk with special reference to the cultural identification of *Brucella abortus* in cream. Investigation in 1,000 herds with 45,000 cows revealed 1,162 secreting *Brucella*, which demonstrated the practical value of the culture test. This system of survey is the principal basis for the systematic control of brucellosis. The author recommends the simultaneous eradication of tuberculosis and brucellosis in cattle.—[E. Hess and W. Sackmann: *Pertaining to the Prevention of Brucellosis*. *Schweiz. Arch. f. Tierheilk.* (July, 1953): 367-374.]—L.V.E.

Living Vaccine for Newcastle Disease

After a short description of the clinical symptoms of Newcastle disease and a discussion of the advantages and disadvantages of dead and living vaccines, there follows a detailed description of an experiment with the Beaudette virus. Hens inoculated via the "wing-web" method appeared

to be immune for two months against natural and artificial infection with virulent Newcastle disease virus. Out of a control group of 40 hens, 30 died; out of 40 inoculated hens, 2 died after infection with virulent virus. On autopsy, these 2 hens appeared not to have died from Newcastle disease. A summary is given of some precautions which have to be observed at the application of living vaccines (Beaudette and Hitchner) on farms with hens of different ages. The Hitchner vaccine can be used without risk on chickens up to the age of 2 months and on laying hens, while the Beaudette vaccine can be applied one week later on the young hens.—[J. Richter: *Some Data Regarding the Application of Living Vaccine Against Pseudofowlpest*. *Tijdschr. voor Diergeneesk.*, 78, (July 15, 1953): 590-601.]—L.V.E.

BOOKS AND REPORTS

The Dog's Medical Dictionary

This book was written for the layman as a guide in first-aid treatment of sick and injured dogs. The subject matter is arranged alphabetically, beginning with "abdominal pain" and finishing with "x-rays." Each subject is discussed briefly, including pertinent facts that should be of value to the dog owner or breeder. Numerous references are made to methods of treatment recommended for use only by veterinarians, such as serums, vaccines, antibiotics, and surgical or other technical procedures. Professional assistance is recommended frequently throughout the book.

It is possible that some may attempt to use this book to replace veterinary service. However, this definitely is not the intent of the author. Instead, the book should serve to give the layman a better understanding of the complexity of canine disease problems, including when and how to use veterinary service.—[*The Dog's Medical Dictionary*. By Alfred J. Sewell, M.R.C.V.S. Revised and largely rewritten by Major W. Hamilton Kirk, M.R.C.V.S. 271 pages. Philosophical Library Inc., 15 East 40th St., New York 16, N. Y. 1952. Price \$4.75.]—K. W. SMITH.

Medical Education Today

This booklet brings together, for filing and ready reference, six articles that recently appeared in the *Journal of Medical Education*. They are written by college deans and officers of the Association of Medical Colleges.

It is felt that medical education is in transition and that a critical reexamination is in order. The subjects presented cover the field rather thoroughly; many tables and graphs supplement the discussions.

While the discussion essentially concerns human medicine, and veterinary medicine is mentioned only once as a related field, this booklet should

meet with much interest to those working in the field of veterinary medical education.

A study of veterinary medical education similar to that given here concerning medical education should bring out pertinent information, such as how many key men in each field will be retiring from teaching and research in the next ten years which, in turn, indicates where the shortages will be and where special effort may be necessary to have the properly qualified men ready to step in. In the medical field, there are now shortages in basic sciences, clinical departments, and pathology. Staffing in four-year colleges is 10 per cent under the standard (29 faculty members per 100 students).

The undergraduate student is given full consideration toward providing more incentive for active learning and training for the kind of practice indicated by the study of "trends in medical practice" (which, incidentally, indicates an increase in group practice and a decrease in private practice).

There are fewer applicants now for entry into medical schools, and those schools limiting their applicants to certain areas, such as a state, are having difficulty in filling their freshman classes.—[*Medical Education Today*. Edited by Dean F. Smiley, Secretary, Association of American Medical Colleges, Chicago. 123 pages. Published by the association, 185 N. Wabash Ave., Chicago 1, Ill., 1953. Price \$1.50.]—ERVIN E. SLATTER.

Cattle Diseases and Their Symptoms

This handbook, prepared for "owners and students," scarcely merits a review. It contains less than two pages of discussion, being just a confused index of possible bovine pathological conditions followed by a similar listing of possible symptoms.

Section I "lists the more common ailments of cattle," with a few supposedly characteristic symptoms of each. Perhaps 150 possible "ailments" are alphabetically juggled to make a listing of about 300 items, such as bites—insect, feet—hairless, teeth—bad.

Section II similarly "lists the more common symptoms of diseases of cattle" with a few diagnoses which those symptoms presumably would suggest.

The booklet contains little usable information and much misinformation. The symptoms given for blackleg include panting, bloating, and bloody discharges from all body openings.

Intelligent "owner" readers are apt to conclude, as Uncle Josh did, that "Its better not to know so much than to know so much that ain't so."—[*An Index, Cattle Diseases and their Symptoms*. By J. W. Bailey. 36 pages. No illustrations. The Webb Publishing Company, St. Paul, Minn. 1953. Price not given.]

THE NEWS

The Ninety-First Annual Session in Seattle

August 23-26, 1954

Information About Hotels, Reservations, and Tour Developments

As announced in the January JOURNAL, this issue contains information about hotels and housing for AVMA convention registrants in Seattle next August. Because Seattle attracts so many visitors and tourists in the summer, the Housing Bureau has found it necessary to offer rooms in a number of first-class hotels, 23 in all, in order to provide accommodations for the expected large turn-out at the AVMA meeting. A majority of the hotels are within a few blocks of the Olympic which will be the principal headquarters.

HOUSING BUREAU WILL HANDLE HOTEL RESERVATIONS

Hotel information and rates, a reservation blank, and also a street map showing locations will be found on advertising pages 42-43 of this issue.

Send your reservation requests to the Housing Bureau at the address shown on the form. *Be sure* to indicate expected date and time of arrival, also departure. Double occupancy of rooms is requested wherever possible. To a limited extent, some of the hotels can provide cots for rooms where occupancy for three persons is desired.

Reservation requests that have been, or may be, sent direct to the Olympic Hotel will be referred to the Housing Bureau for attention. Confirmations of reservations will be sent out by the Housing Bureau after they have been processed.

ROOSEVELT HOTEL WILL BE WOMEN'S AUXILIARY HEADQUARTERS

Arrangements have been made with the officers of the AVMA Women's Auxiliary to utilize the



An aerial view of the campus of the University of Washington in Seattle. The 1954 annual meeting of the AVMA will be held on August 23-26 in Seattle.

Roosevelt Hotel as a subsidiary headquarters for both housing and for some meeting purposes. The Roosevelt is only six blocks from the Olympic and is providing about 100 bedrooms. It also has public space suitable for some of the Auxiliary's business meetings.

It is suggested that officers and delegates of the Women's Auxiliary may wish to name the Roosevelt as their first choice of hotels for accommodations for themselves and members of their families.

SPECIAL AVMA TOUR TO SEATTLE

The Association's Chicago office has completed arrangements with Happiness Tours, Inc., to organize and offer tour plans in connection with the Seattle convention. The tour will be by train, using special cars on a regularly scheduled train out of Chicago, with a choice of four return routes, also on a special car basis, leaving Seattle after the convention is over.

Present plans are for the tour party to leave Chicago on Wednesday, August 18, arriving in Seattle on Sunday morning, August 22. This will allow time for participants to register at their hotels and be ready for early convention registration at the Olympic beginning at noon on Sunday.

Veterinarians and members of their families from the East and parts of the South may join the tour party at Chicago; those from some points in the Middlewest may join at St. Paul, Minn.

A special brochure will be mailed early in the spring to all AVMA members, giving full information about the going and return tours and their costs. The Seattle convention offers fine attractions, vacation-wise, and the tour arrangements will include travel through, and stop-overs at, some of the most scenic spots in the far West and Canadian Rockies. Since the tours will be

operated on a special car basis on regularly scheduled trains, not as a special train, they provide a flexibility that should appeal to many members and their families.

Council on Education Adds Veterinary College at Munich to Recognized List

The Council on Education of the American Veterinary Medical Association, at its regular semi-annual meeting in Chicago on Nov. 24, 1953, took necessary action to place the Veterinary College, Bavarian Ludwig-Maximilian University in Munich, Germany, on the list of "recognized" foreign veterinary colleges for graduates in 1953 and in years subsequent thereto. In so doing, the Council recommends to state boards of veterinary examiners and other agencies engaged in veterinary professional licensure that graduates in the years referred to be accorded the same recognition as graduates of Council-inspected and approved veterinary colleges in the United States and Canada.

The Council continues to recommend the action which it had taken several years previously in granting recognition to graduates of the Munich school in 1939 and in years prior thereto. In other words, the Council recommends that all graduates of the veterinary college in Munich be recognized except those graduating during the period 1940 to 1952, inclusive.

National Trichinosis Conference

The Second National Conference on Trichinosis will be held in the auditorium of the American

(Continued on page 164)



An aerial view of the skyline of Seattle, the 1954 AVMA convention city.



News From Washington



Congressional Committees of Interest to Veterinarians.—The second session of the 83rd Congress opened Wednesday, Jan. 6, 1954, and will consider a number of bills of veterinary interest on which hearings were held last year.

It is believed there will be few, if any, changes in Congressional committee appointments when Congress organizes for the second session.

Standing Committees of the Senate

Agriculture and Forestry

George D. Aiken (Vt.)	Herman Welker (Idaho)
Milton R. Young (N. Dak.)	Allen J. Ellender Sr. (La.)
Edward J. Thyne (Minn.)	Clyde R. Hoey (N. Car.)
Bourke B. Hickenlooper (Iowa)	Olin D. Johnston (S. Car.)
Karl E. Mundt (S. Dak.)	Spessard L. Holland (Fla.)
John J. Williams (Del.)	Clinton P. Anderson (N. M.)
Andrew F. Schoepfel (Kan.)	James O. Eastland (Miss.)
	Earle C. Clements (Ky.)

Harry R. Varney, Chief of Staff

Armed Services

Leverett Saltonstall (Mass.)	John Sherman Cooper (Ky.)
Styles Bridges (N. H.)	Richard B. Russell (Ga.)
Ralph E. Flanders (Vt.)	Harry Flood Byrd (Va.)
Margaret Chase Smith (Maine)	Lyndon B. Johnson (Texas)
Robert C. Hendrickson (N. J.)	Estes Kefauver (Tenn.)
Francis Case (S. Dak.)	Lester C. Hunt (Wyo.)
James H. Duff (Pa.)	John C. Stennis (Miss.)
	Stuart Symington (Mo.)

Philip K. Allen, Chief Clerk

Post Office and Civil Service

Frank Carlson (Kan.)	Olin D. Johnston (S. Car.)
James H. Duff (Pa.)	Matthew M. Neely (W. Va.)
William E. Jenner (Ind.)	John O. Pastore (R. I.)
John Sherman Cooper (Ky.)	A. S. Mike Monroney (Okla.)
Dwight Griswold (Neb.)	Price Daniel (Texas)
William A. Purtell (Conn.)	

Frank A. Paschal, Chief Clerk

Standing Committees of the House

Agriculture

Clifford R. Hope (Kan.)	Harold D. Cooley (N. Car.)
August H. Andresen (Minn.)	W. R. Poage (Texas)
William S. Hill (Colo.)	George M. Grant (Ala.)
Charles B. Hoeven (Iowa)	E. C. Gathings (Ark.)
Sid Simpson (Ill.)	John L. McMillan (S. Car.)
Ernest K. Bramblett (Calif.)	Thomas G. Abernethy (Miss.)
Paul B. Dague (Pa.)	Carl Albert (Okla.)
Ralph Harvey (Ind.)	Watkins M. Abbott (Va.)
Harold O. Lovre (S. Dak.)	James G. Polk (Ohio)
Page Belcher (Okla.)	Pat Sutton (Tenn.)
Clifford G. McIntire (Maine)	W. M. (Don) Wheeler (Ga.)
James S. Golden (Ky.)	Clark W. Thompson (Texas)
William R. Williams (N. Y.)	Paul C. Jones (Mo.)
Karl C. King (Pa.)	A. S. Herlong, Jr. (Fla.)
Robert D. Harrison (Neb.)	E. L. Bartlett (Alaska)
William C. Wampler (Va.)	A. Fernos-Isern (Puerto Rico)
Joseph R. Farrington (Hawaii)	

George L. Reid, Jr., Clerk

The following Congressional committees are those with which the Washington AVMA office has most frequent contact and it is believed that AVMA members will want to keep this list of committee assignments for reference. These committees are taken from the Congressional Directory (83rd Congress, First Session).

Armed Services

Dewey Short (Mo.)	Joseph R. Farrington (Hawaii)
Leslie C. Arends (Ill.)	Carl Vinson (Ga.)
W. Sterling Cole (N. Y.)	Overton Brooks (La.)
Paul W. Shafer (Mich.)	Paul J. Kilday (Texas)
Leroy Johnson (Calif.)	Carl T. Durham (N. Car.)
Leon H. Gavin (Pa.)	L. Mendel Rivers (S. Car.)
Walter Norblad (Ore.)	Philip J. Philbin (Mass.)
James E. Van Zandt (Pa.)	F. Edward Hebert (La.)
James T. Patterson (Conn.)	Arthur Winstead (Miss.)
Paul Cunningham (Iowa)	Melvin Price (Ill.)
William H. Bates (Mass.)	O. C. Fisher (Texas)
William E. Hess (Ohio)	Porter Hardy, Jr. (Va.)
Charles P. Nelson (Maine)	William J. Green, Jr. (Pa.)
James P. S. Devereux (Md.)	Clyde Doyle (Calif.)
C. W. (Runt) Bishop (Ill.)	Victor Wickersham (Okla.)
Alvin E. O'Konski (Wis.)	George P. Miller (Calif.)
Wint Smith (Kan.)	Harold A. Patten (Ariz.)
William G. Bray (Ind.)	Charles E. Bennett (Fla.)
Robert C. Wilson (Calif.)	E. L. Bartlett (Alaska)
	A. Fernos-Isern (Puerto Rico)

Robert W. Smart, Chief Counsel

Post Office and Civil Service

Edward H. Reese (Kan.)	Oliver P. Bolton (Ohio)
Harold C. Hagen (Minn.)	Tom Murray (Tenn.)
Robert Corbett (Pa.)	James H. Morrison (La.)
Katharine St. George (N. Y.)	James C. Davis (Ga.)
Gardner R. Withrow (Wis.)	George M. Rhodes (Pa.)
H. R. Gross (Iowa)	John Lesinski (Mich.)
Cecil M. Harden (Ind.)	John Jarman (Okla.)
William C. Cole (Mo.)	Garrett L. Withers (Ky.)
Albert W. Cretella (Conn.)	John Dowdy (Texas)
Charles S. Gubser (Calif.)	Edward P. Boland (Mass.)
Edward J. Bonin (Pa.)	Hugh Q. Alexander (N. Car.)
Joel T. Broyhill (Va.)	Frazier Reams (Ohio)
	John E. Moss (Calif.)

Lester C. Arvin, Clerk

Ways and Means

Daniel A. Reed (N. Y.)	Victor A. Knox (Mich.)
Thomas A. Jenkins (Ohio)	James B. Utt (Calif.)
Richard M. Simpson (Pa.)	Jere Cooper (Tenn.)
Robert W. Kean (N. J.)	John D. Dingell (Mich.)
Carl T. Curtis (Neb.)	Wilbur D. Mills (Ark.)
Noah M. Mason (Ill.)	Noble J. Gregory (Ky.)
Thomas E. Martin (Iowa)	A. Sidney Camp (Ga.)
Hal Holmes (Wash.)	Aime J. Forand (R. I.)
John W. Byrnes (Wis.)	Herman P. Eberharter (Pa.)
Angier L. Goodwin (Mass.)	Cecil R. King (Calif.)
Antoni N. Sadlak (Conn.)	Thomas J. O'Brien (Ill.)
Howard H. Baker (Tenn.)	Hale Boggs (La.)
Thomas B. Curtis (Mo.)	

Gordon Grand, Jr., Clerk

(Continued from page 162)

Medical Association in Chicago on March 1, 1954. The purposes of this conference are to discuss methods of education, problems of human and animal health, and research in relation to control of this disease.

A New Selective Service Policy

Veterinarians, as well as doctors and dentists who are *special registrants* under the Doctor Draft Act and also are *liable* for induction under the *regular draft* of the Universal Military Training and Service Act, now can, when inducted, apply for Reserve commissions. If the commission is granted, their induction as regular registrants will be postponed. Until this new policy went into effect, those inducted served in an enlisted status unless there happened to be, at that time, openings in the commissioned status.

In order for the new policy to be continued, all requirements for Armed Forces veterinarians must be met by volunteers from this reserve commission group. If the number of reserves volunteering is not sufficient, the profession will probably be excluded from this policy and inductees would again serve as enlisted men while needed officers would again be drawn from Priorities I and II.—*Operations Bull. No. 88, Feb. 24, 1953, as amended Nov. 18, 1953.*

AVMA Research Fellowships Available

The Research Council of the American Veterinary Medical Association announces the availability of a number of fellowships for postgraduate training for the academic year, 1954-1955.

The recipient of a fellowship must be a veterinarian and a citizen of the United States or Canada. Veterinary students who expect to graduate at the end of the current school year may apply for a fellowship. The latest date for filing the completed application form is April 1, 1954.

The Committee on Fellowships of the Research Council will meet in April to consider applications and the awards will be announced not later than May 15. The stipend will be determined in each case by the needs of the individual, the location of the school where he proposes to work, and other factors. In general, the stipends range from \$100 monthly and upward.

Any qualified person interested in graduate training may obtain application blanks and other information by writing to Dr. Robert Getty, secretary, AVMA Research Council, Department of Anatomy, Iowa State College, Ames, Iowa.

Short Course in Virus Diseases

A course in the laboratory diagnosis of virus diseases will be presented by the laboratory branch, Communicable Disease Center, March 15-26, 1954, at the virus and rickettsia section laboratory, Montgomery, Ala. Information and application

forms should be requested from Laboratory Training Services, Communicable Disease Center, U. S. Public Health Service, P. O. Box 185, Chamblee, Ga.

Ralston Purina Fellowship Awards

The Ralston Purina Company's annual program of Research Fellowship Awards will be significantly expanded. The number of annual awards to college students, for graduate study in agricultural research, will be increased from seven to ten. Application blanks are now being sent to agricultural colleges throughout the United States and Canada.

Selection of the winners will continue to be made by a committee of five—one each from the Poultry Science Association, American Veterinary Medical Association, American Dairy Science Association, American Society of Animal Production, and the Association of Land-Grant Colleges.

Three fellowships will be granted in each of the fields of dairy husbandry, animal husbandry, and poultry husbandry, and one in veterinary science. Each fellowship amounts to \$1,560.

The fellowships were first awarded for the 1949-1950 school year.

STUDENT CHAPTER ACTIVITIES

Illinois Chapter.—On Nov. 19, 1953, the University of Illinois Student Chapter of the AVMA held its monthly social meeting. **Dr. Lester Fisher**, Berwyn, veterinarian for the Lincoln Park Zoo in Chicago, gave an excellent descriptive talk of some of the experiences and problems he has had while making his rounds at the zoo. Along with his talk he also showed a film depicting other incidents as a zoo veterinarian.

The Christmas party on December 18, was a combined venture with the faculty and staff of the School of Veterinary Medicine. In addition to the party activities of dancing, singing, and eating, there were humorous skits by groups of the faculty, staff, and students.

s/NORMAN JONES, Secretary.

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Michigan Chapter.—This is a review of the activities of the Michigan State College Student Chapter of the AVMA for the fall term of the 1953-1954 school year.

The Gaines Dog Research Foundation provided two motion pictures, "Training You to Train Your Dog" and "Second Sight," for the October 8 meeting; and **Jim Auble** and **Art Hall**, who represented the Chapter at the annual AVMA meeting in Toronto, reported on that meeting.

Dr. Allan Begg, Marshall, addressed the group on October 22. Other speakers were: **Drs. M. C. Bigelow**, Flushing, and **William Mackie**, Lapeer, on November 5; **Henry Raskin**,

Detroit, November 19; **Mr. Dick Dieters**, Pfizer and Co., and **Mr. Lloyd McCausland**, Merck and Co., December 3.

To help our 250 members become acquainted, name tags, a different color for each class, were worn at the October 8 meeting. Bill Adams, Mitchell Essey, and Chris Baker engineered the project.

The highlight of the winter term was the annual postgraduate conference on Jan. 19-21, 1954, at which the students presented a minstrel show and a semiformal dinner dance, the "medicine ball."

S/CAROL BEITZEL, *Secretary*.

Ohio Chapter.—The following is a resumé of the activities of the Ohio State University Student Chapter of the AVMA during the fall and winter quarters.

Programs during this period included an illustrated talk on procedures in the development of new antibiotics by **Dr. R. C. Klussendorf**; a discussion on activities of the Army Veterinary Corps by **Lt. Col. C. N. Decker**; an illustrated talk on his recent trip to Alaska by **Dr. Paul Brandy**, U. S. BAI, Washington, D. C.; a talk by a representative of the Department of Speech; and a panel discussion on large animal medicine by **Drs. William Hackett, E. J. Hoffert**, and **Roy Ware**.

The social functions included a square dance and a "fun night" on Feb. 3, 1954.

S/J. W. SKAGGS, *Secretary*.

Oklahoma Chapter.—At the first meeting of this school year, Dean H. W. Orr introduced the faculty and the new students, and **Wade Lyons**, representative to the AVMA meeting in Toronto, told of his trip.

Dr. J. J. McVicker discussed "A Veterinarian's Future in Research," and **Dr. W. Y. Higgins**, veterinarian with Ringling Brothers and Barnum Bailey Circus, discussed "A Veterinarian's Life in the Circus," at subsequent meetings. On November 19, **Dr. G. T. Easley**, Turner Ranch, spoke on "Cancer Eye."

S/H. A. JUSTUS, *Secretary*.

WOMEN'S AUXILIARY

Auxiliary Membership.—Several members of the Women's Auxiliary to the AVMA were asked to answer the question, "What does membership in the Auxiliary to the AVMA mean to me?" We are pleased to have some of the replies appear in the Women's Auxiliary column.

S/(MRS. L. R.) MILDRED K. RICHARDSON,
President-Elect.

When asked "What does the Auxiliary mean to me," my first thought was "Just what does the

Auxiliary mean to me? It is important to me, but why?"

The first year I attended the AVMA, I met my husband's friends. The next year, I made many new acquaintances which have ripened into friendships as we meet year after year. Our mutual interest in helping our husbands' progress in their field of medicine binds us close together.

I am proud to belong and participate in a worthy and truly great profession. There is satisfaction in belonging to the Auxiliary to the AVMA and having a small part in shaping its future.

Last, but not least, each section of the country has its distinctive scenery, foods, customs, and modes of entertainment and interest which make a wonderful vacation for the entire family.—*Mrs. Tom Evans, Albuquerque, N. M.*

The AVMA Auxiliary has provided a wonderful opportunity to meet and become friendly with women from my own and other countries. This has helped to promote understanding and goodwill among our people and has created in us veterinary wives tolerance for our neighbors. Meeting in different cities has provided an excuse for travel and a chance to study our continent at first hand.

My association with veterinary wives has helped me to a greater appreciation of, and pride in, the veterinary profession. I feel, too, that our interest in the Auxiliary has been an inspiration and a source of pride to our husbands.—*Mrs. R. H. Wright, Dundas, Ont.*

The Women's Auxiliary to the AVMA offers an opportunity for veterinarians' wives in all parts of the country to become acquainted with each other. This organization is an important factor in enlarging the scope of the AVMA, both in professional standing and benefits to the nation in better disease control.

The student assistance program of the Auxiliary enables many deserving young men to continue their studies in their chosen profession.

It is to be hoped that veterinarian's wives will continue to strengthen the Auxiliary by being members and actively participating in this worthwhile organization.—*Mrs. F. A. Hall, West Lafayette, Ind.*

The value and strength of any organization is based on its desire to give service by filling specific needs and increasing fellowship through state, regional, and national meetings.

The need of students studying veterinary medi-

No invitation is necessary to become a member of the Women's Auxiliary to the AVMA. We welcome all interested women. The dues are only \$1.00 per year. Just write to:
Mrs. C. M. Rodgers, Secretary, Blandinsville, Ill.

cine at Washington State College is filled by the Women's Auxiliary to the Washington State Veterinary Medical Association which sends money annually to purchase reference books. Such service brings members into closer relationship with each other and the students.

Auxiliary meetings contribute to a friendly fellowship between members of the auxiliary and members of the veterinary profession.

These activities give me an inner satisfaction in both the performance of service and in fellowship with members.

I find in 100 words not much warmth could be shown for a subject so close to my heart. I am sure it sounds like a telegram of that many words with the omitted "ands," "the's," commas, and paragraphs.—*Mrs. T. Robert Phelps, Vancouver, Wash.*

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When my husband was notified that he was accepted as a freshman veterinary student at Michigan State College, it was truly an occasion. Soon I received a card from the veterinary students' wives asking me to join their auxiliary. This, too, was a memorable experience. I accepted and attended the social functions and educational classes. Now that we are sophomores, I feel that I have not only gained much in meeting other student wives but also have gained some knowledge of my husband's work.

I am sincerely looking forward to the two remaining years at school and the work in the Auxiliary. I hope that I can retain the knowledge that the Auxiliary has given and will give to me, and that in my own small way, I can help my husband in his practice.—*Evelyn Plymale, Michigan State College, East Lansing, Mich.*

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Kentucky Auxiliary.—The fourteenth semi-annual meeting of the Women's Auxiliary to the Kentucky Veterinary Medical Association was held in the Lafayette Hotel, Lexington, on December 2. Mrs. Helen Worthington, delegate to the national convention in Toronto, reported on that meeting. Three new members were introduced to the group and all members were urged to join the national Auxiliary.

s/Mrs. H. S. WHITE, *Secretary.*

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New York City Auxiliary.—The Women's Auxiliary to the Veterinary Medical Association of New York City held its second organizational meeting at the New York Academy of Sciences on Dec. 2, 1953. The following officers were elected at the business session: Mrs. Charles E. Fletcher, president; Mrs. Robert S. MacKellar, Sr., president-elect; Mrs. Benjamin J. Finkelstein, treasurer; Mrs. Leon Roth, recording secretary; Mrs. Henry E. Grossman, corresponding secretary.

From the enthusiasm expressed at the above well-attended meeting, it is felt this newly formed auxiliary will be a staunch supporter of

both the state and national auxiliaries, in addition to sponsorship of local activities.

s/ (Mrs. HENRY E.) Florence Grossman,
Corresponding Secretary.

• • •

Officers of Auxiliary to Southern V.M.A.—
Mrs. L. A. Mosher of Atlanta and Roswell, Ga.,



Mrs. L. A. Mosher

was elected president of the Women's Auxiliary to the Southern Veterinary Medical Association held recently in Atlanta. Elected to serve with her were Mrs. W. G. Lamb, Athens, Tenn., president-elect; Mrs. John Gadd, Cockeysville, Md., first vice-president; Mrs. Jack Ross, Jackson, Miss., second vice-president; Mrs. James Scatterday, Jacksonville, Fla., secretary; and Mrs. J. L. Sledge, Greensboro, Ala., treasurer.

The Auxiliary voted to contribute to the AVMA Research Fund and to each of the three veterinary schools in the southern states.

s/(Mrs. CHAS. C.) JEWELL RIFE.

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Pennsylvania Auxiliary.—The annual meeting of the Women's Auxiliary to the Pennsylvania State Veterinary Medical Association was held Oct. 14-16, 1953, at the Hotel Roosevelt in Pittsburgh.

Two innovations were introduced at this meeting. The first was an award of merit, presented to Kenneth Clark of Pittsburgh whose dog was credited with saving several lives in a fire last summer. Dr. J. A. McCallam, president of the AVMA, made the presentation. Pins were presented to the past-presidents of the Auxiliary who were present: Mrs. C. D. Service and Mrs. Roy Hoffman.

Projects for the year include a cook book containing favorite recipes; \$10 contributed to the student loan fund; \$25 to the AVMA Re-

search Fund; and \$50 to the Women's Auxiliary to the University of Pennsylvania Student Chapter of the AVMA.

The following officers were installed: Mrs. Vincent Ruth, Lansdale, president; Mrs. S. F. Scheidy, Drexel Hill, president-elect; Mrs. B. J. Zackon, Oley, secretary; and Mrs. J. Eaglemen, Wommelsdorf, treasurer.

s/MRS. B. ZACKON, *Secretary*.

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

- BADAME, G. F.
110 Dixon Ave., Toronto, Ont.
D.V.M., Ontario Veterinary College, 1950.
- BRYSON, BERNARD G.
2932 Purington Ave., Fort Worth, Texas.
D.V.M., Texas A. & M. College, 1940.
- FOX, STUART A.
3701 Locust St., Philadelphia, Pa.
V.M.D., University of Pennsylvania, 1953.
- Savage, DAVID E.
1202 E. Baseline, San Bernardino, Calif.
D.V.M., State College of Washington, 1952.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

- GRUMBLES, LELAND C.
Arctic Aeromedical Laboratory, APO 731, c/o PM Seattle, Wash.
D.V.M., Texas A. & M. College, 1945.
Vouchers: C. N. Barron and J. R. Prine.
- LUKER, CHARLES T.
71st Medical Detachment VFI, APO 19, c/o PM, New York, N.Y.
D.V.M., Texas A. & M. College, 1939.
Vouchers: D. L. Deane and R. W. Mohri.
- YOUNG, JAMES B.
124th Surgical Hospital, APO 174, c/o PM, New York, N.Y.
D.V.M., Texas A. & M. College, 1943.
Vouchers: D. L. Deane and G. M. Grimes.

Second Listing

- DAVIS, HAROLD C., 3832 Florence Dr., Alexandria, Va.
- LAPUZ, NARCISO R., 2310 Roberts St., Pasay City, P. I.
- SCHNEIDER, WARREN J., 9020 West 24th Place, North Riverside, Ill.

1953 Graduate Applicants

The following are graduates who have recently received their veterinary degree and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of student chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Second Listing

University of Pennsylvania

- PROBASCO, ROBERT E. L., V.M.D., R.D. 1, Lebanon, Pa.

U. S. GOVERNMENT

Dr. Metcalf President of N.A.F.V.—Dr. C. V. Metcalf, Kansas City, Mo., was elected president of the National Association of Federal Veterinarians, Sept. 23, 1953, at their thirty-sixth annual convention in Atlantic City. He had served as vice-president-at-large in 1951 and 1952. Born near Sioux City, Iowa, in 1894, Dr. Metcalf was graduated from McKillip Veterinary College, Chicago, in 1918.

Dr. Metcalf accepted an appointment in the Bureau of Animal Industry shortly after graduation and was assigned to the Meat Inspection Division at Sioux City. In 1922, he was trans-



Dr. C. V. Metcalf

ferred to the Division of Virus-Serum Control at Sioux City, and in 1927 was promoted to inspector in charge at St. Paul, Minn. He then served at Omaha, Kansas City, Denver, and again at Sioux City before returning to Kansas City in 1947 as inspector in charge. He has been a member of the AVMA since 1919, and also is a member of the Kansas City Veterinary Medical Association.

His thirty-five years of service should well qualify Dr. Metcalf for the responsibility of his office.

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Proposed Interstate Regulations for Brucellosis.—Cattle moving interstate must be accompanied by a certificate issued by an authorized state or federal inspector, or by a veterinarian approved by the Bureau and state, showing that the cattle have been tested for brucellosis under the supervision of state or federal livestock sanitary officials within thirty days of date of shipment and found negative, except as follows:

- 1) Steers and spayed heifers;
- 2) Strictly feeder calves under 8 months of age and all other calves under 6 months of age;
- 3) Cattle consigned for immediate slaughter or to public stockyards where federal inspection is maintained;
- 4) Bulls and female cattle for strictly feeding purposes shipped under permit from state of destination and to be held subject to quarantine at destination.
- 5) Animals originating in certified brucellosis-free herds;
- 6) Animals originating in modified certified brucellosis-free areas;
- 7) Animals identified as "official vaccinates" and under 30 months of age on date of shipment;
- 8) Officially calfhood-vaccinated animals over 30 but under 36 months of age, providing the blood test within thirty days of shipment does not disclose a reaction exceeding incomplete in 1:100.

"Official vaccinates" are cattle vaccinated under the supervision of state or federal livestock disease control officials with a vaccine approved by the BAI, and permanently identified and reported at the time of vaccination.

"Feeder cattle" are animals of the beef type and breeds and not used for breeding purposes.

"Certified herds and areas" are as defined by the Bureau of Animal Industry.

"Reactors" and "negative" are defined in accordance with BAI instructions.

[**Note.**—The above proposed regulations will appear in the *Federal Register* with an invitation for prompt comments. The JOURNAL hereby invites its readers, who may wish to express opinions on this regulation, to address same, before March 1, 1954, to the AVMA Committee on Brucellosis, 600 S. Michigan Ave., Chicago 5, Ill.]

AMONG THE STATES AND PROVINCES

Arizona

State Association.—The annual meeting of the Arizona Veterinary Medical Association was held Dec. 3-5, 1953, at the Arizona Manor in Phoenix.

Guest speakers who presented papers, at the

scientific session were: **Drs. Myron A. Thom**, Pasadena, Calif.; **D. R. Mackey**, Greeley, Colo.; **G. R. Moore**, Michigan State College, East Lansing; **E. J. Frick**, Kansas State College, Manhattan; **W. V. Ergenbright (M.D.)**, Phoenix; **Mack Harvey**, Pearl River, N. Y.; **W. W. Harkins**, Bureau of Animal Industry, Douglas; **Jack A. King**, state veterinarian, Phoenix; **Donald Miller**, BAI, Phoenix; **Raymond E. Reed**, University of Arizona, Tucson; and **Lemac Hopkins (Ph.D.)**, University of Arizona Experiment Station, Mesa.

S/E. B. POWELL, JR.

California

State Association.—The midwinter conference of the California State Veterinary Medical Association was held at the School of Veterinary Medicine, University of California, Davis, on Jan. 25-27, 1954.

The following speakers addressed the group: **Drs. C. N. Bramer**, Palo Alto; **Lester Breslow (M.D.)**, chief, Bureau of Chronic Diseases, California State Department of Public Health; **A. H. Craige, Jr.**, Pitman-Moore Co., Indianapolis, Ind.; **C. M. Hamilton**, Redwood City; **J. G. Hardenbergh**, Executive Secretary of the AVMA, Chicago; **Jacques Jenny**, University of Pennsylvania, Philadelphia, Pa.; **Norman McBride**, Pasadena; **Col. Russell McNellis**, Presidio, San Francisco; **F. L. Ott (Ph.D.)**, Fromm Laboratories, Grafton, Wis.; **Emmett Paul**, Redwood City; **Gordon Schulz**, Division of Animal Industry, Sacramento; **Kenneth Smith**, Sioux City, Iowa; **N. L. Van Demark (Ph.D.)**, University of Illinois, Urbana; and the following speakers from the Experiment Station at Davis: **Drs. D. R. Cordy**, **J. R. Douglas**, **D. E. Jasper**, **Blaine McGowan, Jr.**, **D. G. McKercher**, **J. E. Moulton**, **E. A. Rhode**, and **R. F. Vetter**.

At the annual banquet, held the evening of January 26, Dr. George Hart was master of ceremonies.

S/HERB WARREN, *Publicity Chairman*.

Connecticut

State Association.—The regular quarterly meeting of the Connecticut Veterinary Medical Association was held at Milford, Conn., on Nov. 4, 1953, with approximately 60 members and guests in attendance.

Members of the State Brucellosis Commission were guests of the Association and discussed the activities of the Commission in relation to the state brucellosis program. **Dr. Salo Jonas**, New Haven, presented a paper on "The Self-Retaining Medullary Extension Pin" and showed radiographs and slides. The paper created considerable interest and discussion.

S/NIEL W. PIEPER, *Resident Secretary*.

Delaware

State Association.—The annual meeting of the Delaware Veterinary Medical Association

was held Dec. 10, 1953, at the Hotel Rodney in Wilmington.

The following speakers addressed the group: **Mr. John Clough**, acting secretary of the Delaware State Board of Agriculture; **Brig. Gen. J. A. McCallam**, president of the AVMA; **Drs. A. L. Brueckner**, University of Maryland, College Park; and **Hadley C. Stephenson**, Cornell University, Ithaca.

s/E. F. WALLER, *Secretary*.

Georgia

History of the Southern V.M.A.—According to Dr. W. M. Burson, Athens, Ga., the only survivor of five charter members, the Southeastern Veterinary Medical Association which, in 1937, became the Southern Veterinary Medical Association, was conceived in 1916 at the AVMA convention in Detroit. The other founders were Drs. C. A. Cary, Auburn, Ala., the first president; John Handley, Atlanta, Ga., the first secretary; and Tate Butler and J. A. Roberts of Raleigh, N. Car.

Plans for the association were made while the five men were on a convention boat trip. Since the first meeting at the Piedmont Hotel, Atlanta, with 52 graduate veterinarians attending, meetings have been held annually.

In thirty-seven years, the association has had only three secretaries. Drs. Handley, L. A. Mosher, Georgia, and A. A. Husman, North Carolina.

Membership includes all veterinarians in 14 southern states, no dues being assessed.—*Georgia Vet., Nov., 1953.*

Illinois

Death of Dr. David S. Jaffray.—Dr. David S. Jaffray, 75, Rockford, died suddenly on Nov. 4, 1953, while en route to Florida where he and Mrs. Jaffray were planning to spend the winter. Death was caused by a coronary attack.

Dr. Jaffray graduated from Chicago Veterinary College in 1899 and was associated in practice with his brother, Dr. John B. Jaffray (CVC '03) for over fifty years until his retirement a few years ago. Since then, he had lived in Rockford and operated a dairy farm near Roscoe.

He had been a member of the AVMA for forty-four years, having been admitted in 1909. He was also a long-time member of the Chicago and Illinois Veterinary Medical Associations. He is survived by his widow and two brothers, Joseph and Dr. John B., who last year celebrated fifty years in active practice.

Indiana

Northeastern Association.—The Northeastern Indiana Veterinary Medical Association held a meeting in Fort Wayne on Dec. 8, 1953. The following officers were elected: Drs. Harry J.

Walko, Bluffton, president; Ralph E. Allison, Decatur, vice-president; and Ervin V. Blume, Butler, secretary-treasurer. The rest of the evening was taken up in a gift exchange, games, and carol singing.

s/J. L. KIXMILLER, *Resident Secretary*.

Michiana Association.—The Michiana Veterinary Medical Association and auxiliary put aside veterinary problems for an evening and held their annual Christmas party in the Club Normandy in Mishawaka on December 16. Fifty members enjoyed a delicious dinner, of steak and turkey, and the floor show.

s/BRUCE HOSTRAWSEY, *Secretary*.

Northwestern Association.—Dr. J. Green, state veterinarian, discussed the progress made in tuberculosis and brucellosis testing and the lack of recent outbreaks of vesicular exanthema at the December 3 meeting of the Northwestern Indiana Veterinary Medical Association.

s/J. L. KIXMILLER, *Resident Secretary*.

Wabash Valley Association.—The Wabash Valley Veterinary Medical Association met in Rochester on Dec. 9, 1953, and elected the following officers: Drs. Robert M. Hafner, Huntington, president; Henry A. Stevens, North Manchester, vice-president; Phillip C. Clinger, Rochester, secretary; and George E. Dershem, Roann, board of directors. Members enjoyed a gift exchange, a Christmas play by a local school group, and carol singing.

s/J. L. KIXMILLER, *Resident Secretary*.

Death of Dr. Ray F. Smith.—Dr. Ray F. Smith, 60, Boswell, Ind., pioneer state veterinarian of Indiana, died Nov. 10, 1953. A product of Chicago Veterinary College in 1917, he practiced in Boswell for a time, and later became interested in poultry raising and the poultry feed business. When the Indiana State Livestock Sanitary Board was established, he served on its board of directors and later was appointed state veterinarian, a position he resigned after a short time because of ill health. In recent years, he had largely retired from active work.

Kentucky

Conference for Veterinarians.—The twenty-seventh annual conference for veterinarians, sponsored by the University of Kentucky, Lexington, was held Dec. 2, 1953, in the animal pathology building.

The following speakers participated in the program: **Drs. J. M. Edney**, University of Kentucky; **Dale A. Porter**, regional laboratory, Auburn, Ala.; **W. S. Gochenour**, Pitman-Moore Co., Indianapolis, Ind.; and **Morris Scherago**, University of Kentucky.

s/T. J. STEARNS, *Resident Secretary*.

Massachusetts

Worcester County Association.—The November 11 meeting of the Worcester County Veterinary Medical Association was held at Dr. M. M. Mason's home in Worcester, with Vice President Norman R. Ward presiding. The guest speaker at this meeting was **Dr. Ralph Povar**, of Providence, who spoke on "Leptospirosis and Its Relation to Kidney Diseases." A round-table discussion followed his talk.

The following officers were elected: Drs. M. I. Lebeaux, Leominster, president; D. W. Hey, Webster, secretary; and W. C. Maker, Shrewsbury, treasurer.

Mrs. Mason, assisted by Mrs. Tom Boria and Mrs. Mat Carr, served refreshments.

At the December 16 meeting, the guest speakers were **Walter B. Shaw** and **Ernest A. George**, associate county agricultural agents. **Dr. Glasser**, a dentist from Fort Devens, presented a motion picture, "Canine Root Canal Therapy and Extraction."

s/DONALD W. HEY, *Secretary*.

State Association.—At the December 16 meeting of the Massachusetts Veterinary Association in the Hotel Beaconsfield, Brookline, **Mr. Stanley Burton**, accountant, discussed "The Value of Accounting to the Practitioner of Veterinary Medicine."

s/C. LAWRENCE BLAKELY, *Secretary*.

Missouri

Kansas City Association.—At the December 15 meeting of the Kansas City Veterinary Medical Association, held at the Continental Hotel, **Dr. Dean Folse**, Kansas State College, Manhattan, discussed "Newer Aspects of Parasite Problems."

s/J. C. DAVIS, *Secretary*.

Nebraska

State Association.—The Nebraska V.M.A. held its annual meeting at Lincoln on Dec. 1-3, 1953. The attendance totaled 275, which is the largest meeting on record for this association. The speakers included **Dr. O. F. Lundberg**, Wausa; **Governor Robert Crosby**; **Dr. J. R. Dick** of Fort Dodge, Iowa; **Mr. N. L. Baker** of the University of Nebraska, Lincoln; **Dr. D. A. Smith** of Ames, Iowa; **Dr. E. R. Frank** of Kansas State College, Manhattan.

The following officers were elected for the ensuing year: Drs. E. L. Metcalf, DeWitt, president; Norman Kruse, Genoa, vice-president; W. T. Spencer, Lincoln, secretary-treasurer; Paul Matthews, Omaha, AVMA resident secretary; W. I. Nelson, Herman, and P. L. Cady, Arlington, were selected as delegate and alternate to the AVMA House of Representatives.

Personal.—On Nov. 29, 1953, **Dr. L. O.**

Goodloe (KSC '50) Omaha, opened a new animal hospital. It features plastic tile in the examination room, surgery, and pharmacy, and ceramic tile in the hall. The front of the building and the reception room are of modernistic design.

Dr. Van Es Awarded Kiwanis "Distinguished Service" Medal.—**Dr. Leunis Van Es**, former



Dr. Leunis Van Es

head of the Department of Animal Pathology and Hygiene at the University of Nebraska, had another honor added to his distinguished record on Nov. 20, 1953, when the Kiwanis Club of Lincoln conferred upon him its "Distinguished Service Medal." The presentation program cited Dr. Van Es as "administrator, scholar, citizen," and included a special program of music and tributes, including a brochure of appreciation which recited outstanding events in the recipient's life and was prepared by Dr. R. M. Bourne.

Dr. Van Es is the thirtieth recipient of the Lincoln Kiwanis medal, the awarding of which was inaugurated in 1922, there having been no awards in 1941 and 1949. The late General John J. Pershing was awarded the medal in 1931.

The medal awarded Dr. Van Es reads on the obverse, "Kiwanis International—We Build—For Outstanding Service to the Community" and on the reverse, "awarded to Leunis Van Es, M.D., D.V.S., by the Kiwanis Club of Lincoln, Nebraska—1953."

New Jersey

Dr. Hughes Retires from Health Department.—**Dr. M. J. Hughes** (NYS '20) on Jan. 1, 1954, retired as chief veterinarian of the Department

of Health of Newark. Dr. Hughes served approximately twenty-seven years with the Newark Department of Health and was chief veterinarian for the past eight years. He will devote the years of his retirement to a limited amount of small animal practice and his favorite hobby of boating at his home in Silverton, near the Toms River.

Oklahoma

Death of Dr. D. H. Ricks.—Dr. Daniel H. Ricks, 52, former state veterinarian, died Nov. 19, 1953. He received his veterinary degree from Alabama Polytechnic Institute in 1930. Born in Hilton, Ga., Nov. 24, 1901, Dr. Ricks received his preliminary education at Southeastern Teachers College and at Oklahoma City University before enrolling in veterinary medicine. He was a member of the Veterinary Reserve Corps of the Army, of his state veterinary medical association, and of the AVMA, which he joined in 1933.

Pennsylvania

Conference of Veterinarians.—The fifty-fourth annual conference of veterinarians was held Jan. 5-6, 1954, at the School of Veterinary Medicine, University of Pennsylvania.

The following guest speakers addressed the group: **Drs. W. A. Aitken**, editor in chief, AVMA, Chicago; **Alan Bachrach**, Philadelphia; **Gerald F. Combs**, Ph.D., University of Maryland, College Park; **Morris S. Cover**, University of Delaware, Newark; **C. E. DeCamp**, Pitman-Moore Co., New York, N. Y.; **R. W. Dougherty**, New York State Veterinary College, Ithaca; **Brig. Gen. J. L. Hartman**, chief, Veterinary Division, Department of the Army, Washington 25, D. C.; **Drs. Charles J. Hollister**, Montrose; **L. M. Hutchings**, Department of Veterinary Science, Purdue University, Lafayette, Ind.; **Martin M. Kaplan**, director, Veterinary Division, World Health Organization, United Nations, Geneva, Switzerland; **Cloy B. Knodt** (Ph.D.), Pennsylvania State College, State College; **William G. Magrane**, Mishawaka, Ind.; **Robert E. Mather**, Rutgers University, Dairy Research Farm, Sussex, N. J.; **Brig. Gen. J. A. McCallam**, Washington, D. C., president of the AVMA; **Drs. Raymond McKinley**, Erie; **Howard A. Milo**, director, Pennsylvania BAI, Harrisburg; **Arthur W. Patterson, Jr.**, Hanover; **E. I. Robertson** (Ph.D.), Lancaster; **S. F. Scheidy**, Sharp & Dohme, Inc., West Point; **Lt. Col. Bernard F. Trum**, Oak Ridge, Tenn.; and **Norman H. Topping** (M.D.), vice-president in charge of medical affairs, University of Pennsylvania.

The following members of the faculty of the School of Veterinary Medicine also participated in the program: **Drs. Mark W. Allam**, dean, **David W. Crisman**, **David K. Detweiler**, **M. Josephine Deubler**, **John H. Graves**, **Frantisek**

Kral, **W. E. LaGrange**, **James H. Mark**, **John E. Martin**, **John T. McGrath**, **Charles W. Raker**, and **George F. Shaw**.

s/MARK W. ALLAM, *Dean*.

Bucks-Montgomery Association.—At the December 19 meeting of the Bucks-Montgomery Veterinary Medical Association, **Dr. C. O. Newhaus**, of the Bureau of Animal Industry, discussed the latest developments in brucellosis and vesicular exanthema.

s/V. W. RUTH, *Secretary*.

Personal.—Dr. Samuel C. Rice (UP '53) has purchased the practice of Dr. D. P. Ehlers of Butler.

Tennessee

Tennessee Outlaws Cholera Virus.—On Jan. 1, 1954, Tennessee joined its sister state, Alabama, to become the second state to outlaw the possession or use of virulent hog cholera virus. The use of modified viruses is not affected. The new law (H. B. 1014) provides that infected premises be quarantined for at least thirty days; that no hogs be removed for at least thirty days following appearance of the last case of cholera; and that dead animals be either immediately burned or moved to rendering plants in trucks with water-tight bodies.

It also authorizes the counties which desire to eradicate cholera to appropriate and expend county funds for the employment of inspectors and other employees needed to enforce this act. Inspectors are to be approved by, and work under, the direction of the state veterinarian. The commissioner of Agriculture, with the approval of the State Board of Agriculture, is to promulgate the rules and regulations necessary to accomplish the intent and purposes of this act. Violators of the act shall be fined not less than \$10.00 nor more than \$500.

Washington

South Puget Sound Association.—The South Puget Sound Veterinary Medical Association held a mixed social meeting November 12 at the Top of the Ocean in Tacoma. Over sixty members and guests enjoyed a smorgasbord, followed by entertainment and dancing. **Dr. James R. Lucas** of Seattle acted as master of ceremonies. Among the guests were the president and vice-president of the Washington State Veterinary Medical Association, **Dr. James C. Kraft** and **Dr. Don A. Clarke**, respectively, both of Seattle.

At a previous meeting, the South Puget Sound Veterinary Medical Association elected the following officers: **Drs. V. P. Ferrucci**, Puyallup, president; **D. R. Vetter**, Raymond, vice-president; **Irwin Erickson**, Puyallup, secretary-treasurer; and **Jo Browne**, Puyallup, corresponding secretary.

At the December meeting, held at the Steak House in Olympia, **Dr. Arnold Slater**, Evergreen Breeders Association, Olympia, showed slides on sterility in cattle. **Dr. Ray Bradbury**, Mount Vernon, who recently spent six weeks in South America, Panama, and Guatemala, showed some of the pictures he had taken and told of some of his experiences.

s/Jo BROWNE, *Corresponding Secretary.*

J. L. ELLIS, *Resident Secretary.*

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Seattle Association.—The December meeting of the Seattle Veterinary Medical Association was the annual Christmas party, held jointly with the Auxiliary, at the home of Dr. and Mrs. Fred Cummings. All but the most pressing business was shelved while the group enjoyed a social evening.

Regular meetings of the Association and Auxiliary are held the third Monday of each month in separate rooms of the Cummings home. The veterinarians hear such speakers as **Mr. Carl Kenyon**, who showed slides on "Wild-life of the Pribiloff Islands" at the October meeting, and **Capt. R. E. Fielding**, U. S. Navy Medical Corps, who showed slides taken in Russia when he was attached to the American Embassy in Moscow.

Texas

New Veterinary Hospital at Texas A. & M.—The School of Veterinary Medicine at the A. & M. College of Texas formally dedicated its new veterinary hospital on Jan. 24, 1954. Constructed of brick, concrete, and glazed tile, the new building houses the large and small animal clinics, clinical diagnostic laboratory, two classrooms, and offices for the Department of Veterinary Medicine and Surgery which operates the

hospital. Dedication exercises were followed by an open house.

Dr. A. H. Quin, Kansas City, Mo., president-elect of the AVMA, made the principal address at the dedication exercises.

Wyoming

State Association.—The Wyoming State Veterinary Medical Association held a mid-season conference in Casper on November 16, with approximately 30 veterinarians in attendance. **Dr. R. F. Pierson**, Saratoga, presented a paper on brisket disease, and **Dr. J. E. English**, Cody, described some of the difficulties encountered in raising calves on one ranch and the results that were secured by improving the ration fed the cows. Films were shown on foot-and-mouth disease in Mexico, comparison of antiseptic values, and coramine.

Dr. J. F. Ryff was appointed resident secretary for the next two years; **Dr. O. E. Bunnell**, Worland, was nominated to represent the Association on the brucellosis committee. The meeting was highly successful and members considered making it an annual affair.

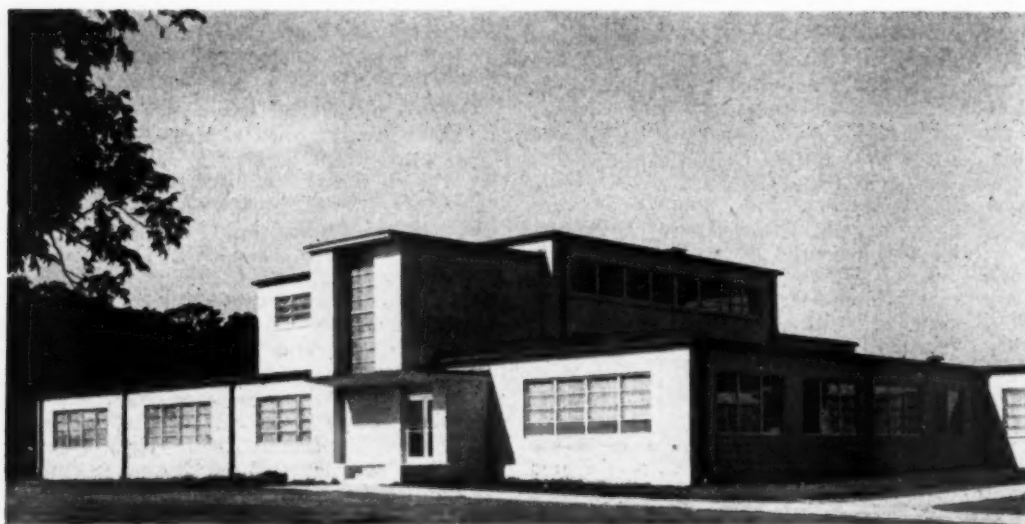
s/J. F. RYFF, *Resident Secretary.*

FOREIGN NEWS

Brazil

New officers of Women's Auxiliary Elected.

—The wives of veterinarians in Sao Paulo, who formed a society three years ago, recently elected a new board of officers. They are Mrs. Maria Ferri-Soares Veiga, president; Mrs. Nina Pacheco Jordao, vice-president; Mrs. Olga Panelli and Mrs. Ruth Viano Raimo, first and



The new veterinary hospital at the A. & M. College of Texas.

second secretaries, respectively; Mrs. Julieta Berardinelli, treasurer; Mesdames Conceicao Varela de Carvalho and Eucarina Treu, board members.

The society, whose objectives are to strengthen friendships among wives of veterinarians in Sao Paulo and to promote closer bonds among foreign veterinarians' wives, now has a membership of 71. There is only one similar society in Brazil, in Porto Alegre, but the wives of veterinarians in some other South American countries have organized women's auxiliaries. At the recent meeting of the International Women's Auxiliary to the Veterinary Profession, held in Stockholm during the Fifteenth International Veterinary Congress, Dr. Virginia Buff D'Apice, past-president of the Sao Paulo Society, was elected president of the international women's group.

The women of the Sao Paulo society are making plans to welcome the wives of veterinarians who will be coming to that city for the Second Pan American Congress of Veterinary Medicine which will be held there April 3-10, 1954.

Greece

Dr. Aspiotis to Study in the United States.—

Dr. Nichols C. Aspiotis, head of the Department of Physiology and Pharmacology, School of Veterinary Medicine, University of Salonika, Salonika, Greece, is now taking graduate work under Dr. H. H. Dukes at Cornell University, Ithaca, N. Y. Dr. Aspiotis was recipient of a Fulbright Scholarship Award. He arrived in the United States on Nov. 2, 1953.

Italy

Second International Medical and Health Exhibition.—Announcement has been made of the Second International Medical and Health Exhibition to be held in Turin May 29 to June 6, 1954. The display will give an over-all picture of the progress made in the various fields of medicine, surgery, and numerous international meetings of medico-surgical, veterinary medical, and pharmaceutical groups will be held at the same time. The exhibition will be held in Valentine Park, Turin, and is sponsored by the "Minerva Medica" journalistic group and the Italian Medical Association.

Peru

Dr. Dukes Honored by Peruvian Association.

—Dr. H. H. Dukes, professor of veterinary physiology at New York State Veterinary College, spent some time in South America the latter part of 1953 visiting some of the veterinary schools and other points of interest. During his stay in Lima, the Peruvian Veterinary Medical Association made him an honorary member of that organization in recognition

of his outstanding achievements in veterinary physiology and education. Dr. Dukes gave a lecture on veterinary education during the meeting.

S/JUAN FIGUEROA.

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New Officers of Women's Auxiliary Elected.

—At the annual meeting of the Women's Auxiliary to the Peruvian Veterinary Medical Association, held in November, 1953, the following new officers were elected: Mrs. Polly Figueroa, president; Mrs. Hilda de Soldana, vice-president; Mrs. Billy de Ramos Saco, corresponding secretary; Mrs. Rosa de Ruiz, acting secretary; Mrs. Jeanne de Leon, treasurer. Mrs. Celia Suarez retired as president at the meeting.

VETERINARY MILITARY SERVICE

Air Force Veterinary Officer Receives Award.

—Colonel James R. Karr (V.C.) U.S. Air Force (OSU '32), recently received the Bronze Star Medal. He personally directed the sentry dog program, in Korea, which played an important part in the security of many air bases.

Colonel Karr has been director of Veterinary Services, Far East Air Force, since June, 1951. In December, 1953, he was assigned to duty as Command veterinarian, headquarters Air Training Command, Scott Air Force Base, Ill.

BIRTHS

Dr. (MSC '40) and Mrs. Oscar Sussman, Princeton, N. J., announce the birth of a son, Oscar Timothy, on Nov. 16, 1953.

Dr. (OVC '49) and Mrs. Douglas S. Darlington, Army Chemical Center, Md., announce the birth of a daughter, Janet Kathleen, on Nov. 24, 1953.

Dr. (GA '53) and Mrs. R. B. Rigler, Safford, Ariz., announce the birth of a son, Thomas Kenny, on Nov. 25, 1953.

DEATHS

John C. Brown (UVC '04), 83, Joy, Ill., died Sept. 26, 1952. Dr. Brown is survived by his widow.

Lloyd C. Brown (OSU '19), 62, Decatur, Ill., died Nov. 17, 1953. Dr. Brown was a member of the Illinois State Veterinary Medical Association. He is survived by his widow, a son, and a daughter.

Benjamin H. Clem (IND '13), 64, New Madison, Ohio, died Nov. 19, 1953. Dr. Clem, a general practitioner, had retired recently.

Joseph D. Cluts (WES '01), 75, Canton, Ill., died Dec. 4, 1953. Dr. Cluts had practiced near

Canton for more than fifty years. He is survived by his widow, a daughter and a granddaughter.

★**Willard N. Cochran** (TH '12), 64, Flat Rock, Ill., died during the latter part of 1953. Dr. Cochran had been in ill health for some time and was on leave of absence from his post as federal poultry inspector at Warsaw, Ind., for six weeks. He is survived by his widow and three daughters. Dr. Cochran was a member of the AVMA.

Iris N. Davis (IND '11), Bargersville, Ind., died recently.

George H. Elliott (KCV '09), 66, Quincy, Ill., died April 23, 1953. Dr. Elliott had retired from practice. He is survived by his widow.

William R. Fullarton (ONT '94), 87, Dubuque, Iowa, died Aug. 7, 1953. Dr. Fullarton was a general practitioner.

Ralph E. Hammond (MSC '22), Flint, Mich., died Sept. 19, 1953. Dr. Hammond was a general practitioner.

★**David S. Jaffray** (CVC '99), 75, Rockford, Ill., died during 1952. Dr. Jaffray was a member of the AVMA for over forty years. An obituary appears on page 169 of this JOURNAL.

Charlie R. James (MCK '11), Springfield, Ill., died recently. Dr. James was a general practitioner.

Anthony Jandernoa (GR '17), Pewamo, Mich., died recently. Dr. Jandernoa was a general practitioner.

Fred L. Knappe (STJ '19), 58, Lexington, Neb., died Aug. 8, 1953. Dr. Knappe, one of the best-loved members of his community was a veteran of World War I, a member of the Methodist Church, Masonic and IOOF lodges, Lexington Rotary Club, and had been a member of the AVMA. He is survived by his widow, two daughters, and a son.

★**John T. McGilvray** (CVC '07), 72, Sioux Falls, S. Dak., died Aug. 10, 1953. Dr. McGilvray was a member of the South Dakota State Veterinary Medical Association and of the AVMA.

Luke T. Nagle (HAR '99), Newton Centre, Mass., died Aug. 6, 1953. Dr. Nagle was a small animal practitioner and had served with the U. S. Bureau of Animal Industry until his retirement several years ago.

★**I. E. Newsom** (SF '06; KCV '09), 70, Fort Collins, Colo., died Jan. 6, 1954. An obituary editorial appears on page 157 of this JOURNAL.

★**Clarence L. Norris** (KCV '07), 80, Seattle, Wash., died recently. Dr. Norris was employed by the state of Washington, in 1937, to make a survey of the slaughterhouses in the state. He pioneered in improving slaughter conditions and set up a state meat inspection service. He retired in 1941. Dr. Norris was a member of the AVMA for forty-six years.

★**Samuel V. Ramsey** (TH '12), 60, Miami, Fla., died Sept. 25, 1953. Dr. Ramsey practiced in Terre Haute, Ind., until 1936, at which time

he built the Bayshore Clinic in Miami, Fla., where he practiced until ill health forced his retirement. Dr. Ramsey organized the South Florida Veterinary Society and was president of that society and of the Florida State Veterinary Medical Association. He was a member of the AVMA.

★**Daniel H. Ricks** (API '30), 52, Oklahoma City, Okla., died Nov. 19, 1953, of a heart attack. He was stricken while delivering an address at a meeting of poultry raisers in Claremore, Okla. An obituary appears on page 171 of this JOURNAL.

Dr. Ricks is survived by his widow and a daughter. He was a member of the AVMA.

John A. Roberts (ISC '28), 55, Sacramento, Calif., died Oct. 21, 1953. Dr. Roberts was employed part time by the U. S. Bureau of Animal Industry. He also engaged in general practice.

Ray F. Smith (CVC '17), 60, Boswell, Ind., died Nov. 10, 1953. Dr. Smith had been a member of the AVMA. An obituary appears on page 169 of this JOURNAL.

Theodore J. Stover (ONT '02), 88, Laguna Beach, Calif., died Nov. 23, 1953. Dr. Stover was resident veterinarian and superintendent of livestock at the world famous Santa Anita Rancho from 1915 until it closed in 1923, at which time he became a charter member of the Los Angeles County Livestock Department. He retired in 1937. He was for many years a member of the AVMA, a member of the Southern California Veterinary Medical Association, and was a life member of the California State Veterinary Medical Association. Dr. Stover is survived by his widow; one daughter, Alice S. Hurt; three sons, Harold, Martel, and Donald (WSC '30); seven grandchildren and four great grandchildren.

Edwin Temple (MCK '11), Tampico, Ill., died on June 26, 1953, after thirty-nine years in general practice. Dr. Temple is survived by his widow.

★**Robert H. Walker** (WSC '41), 36, Pleasanton, Calif., died June 16, 1953. Dr. Walker was admitted to the AVMA in 1941.

Dayton M. Warren (OSU '24), Missoula, Mont., died late in August, 1953. Dr. Warren had been a member of the AVMA.

★**Jesse T. Wilson** (KCV '18), 60, Hampton, Va., died Aug. 6, 1953. Dr. Wilson was a member of the Virginia State Veterinary Medical Association and had served as its president. He was also a member of the Board of Veterinary Medical Examiners of Virginia, and was admitted to the AVMA in 1939.

★**Herschel J. Wright** (OSU '23), 52, Dayton, Ohio, died Oct. 25, 1953. Dr. Wright was a member of the Ohio State, Miami Valley, and Southwestern Ohio Veterinary Medical Associations. He was admitted to the AVMA in 1947.

★Indicates members of the AVMA.

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(COMING MEETINGS—continued from p. 26)

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association,
the second Tuesday of each month. David
E. Madsen, 44 South 4th St., San Jose, Calif.,
secretary.

Cedar Valley Veterinary Association, the second
Monday of each month (except July and
August) at Black's Tea Room, Waterloo.
F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Associa-
tion, the fourth Tuesday of each month.
W. E. Smith, 516 Oatman, Sanger, Calif.,
secretary.

Central Carolina Veterinary Medical Associa-
tion, the second Wednesday of each month at
7:00 p.m. in the O'Henry Hotel in Greens-
boro. Mr. Earl D. Adams, Greensboro, N.
Car., secretary.

Chicago Veterinary Medical Association, the
second Tuesday of each month. Robert C.
Glover, 1021 Davis St., Evanston, Ill., secretary.

Coastal Bend Veterinary Association (Texas),
the second Wednesday of each month. J. E.
Hoban, 4301 S. Port Ave., Corpus Christi,
Texas, secretary.

Coon Valley Veterinary Association, the second
Wednesday of each month, September through
May, at the Bradford Hotel, Storm Lake,
Iowa. J. R. Rosdail, Pomeroy, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veteri-
nary Medical Association, the first Wednes-
day of each month—September through May
(except January)—at 9:00 p.m. at the Carter
Hotel, Cleveland, Ohio. Roger W. Grundish,
4217 Mayfield Road, South Euclid 21, Ohio,
secretary.

East Bay Veterinary Medical Association, bi-
monthly, the fourth Wednesday. Robert
Clemens, 23352 Orchard, Hayward, Calif.,
secretary.

Eastern North Carolina Veterinary Medical
Association, the first Friday of each month,
time and place specified monthly. C. B. Ran-
dall, Kinston, N. Car., secretary.

Fayette County Veterinary Association, Iowa,
the third Tuesday of each month, except in
July and August, at Pa and Ma's Restaurant,
West Union, Iowa. Donald E. Moore, Box
178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical
Association, the second Thursday of each
month, time and place specified monthly.
J. O. Whiddon, 829 San Marco Blvd., Jack-
sonville, Fla.

Greater St. Louis Veterinary Medical Associa-
tion, the first Friday of the month at the
York Hotel, Sixth and Market Streets.

(Continued on p. 30)

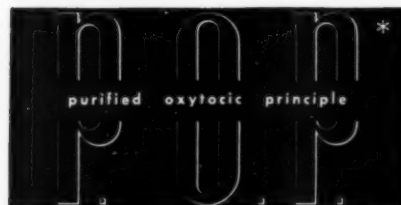
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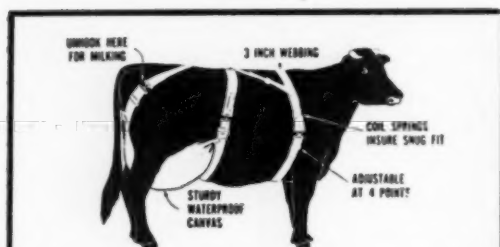
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Luther E. Fredrickson, Room 11, Municipal Courts Bldg., St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. E. M. Lang, 716 E. Broadway, Louisville, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. J. A. Zacher, 3632 Main St., Kansas City, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. J. C. Davis, 7332 Canterbury St., Kansas City 13, Mo., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. Richard A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Kyowva Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Karl Mayer, 1531 Fourth Ave., Huntington, W. Va., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from September through May, at the Academy of Medicine of Northern New Jersey, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at Hotel LaSalle, South Bend, Ind. Bruce Hostrawser, 2621 Mishawaka Ave., South Bend, Ind., secretary.

(Continued on p. 32)

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Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. George McCollister, 2146 Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy, Mobile, Ala., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. Lewis J. Campbell, 66 Marion Ave., Salinas, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark R3, Del., secretary.

New York City, Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63 St., New York City. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern Colorado Veterinary Medical Association, the second Monday of each month. William D. Carlson, P.O. Box 478, Fort Collins, Colo., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday evening from September through June, at the Casa Mana Restaurant, Cedar Lane, Teaneck, N. J. Robert R. Shomer, 1680 Teaneck Road, N. J., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except August and July. R. J. Keller, 1701 N. Highland Drive, Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. R. E. Hoadley, Coachella, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the

(Continued on p. 34)

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- Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.
- Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.
- Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.
- Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. F. Ferguson, 1702 S. Dort Highway, Flint, Mich., secretary.
- San Diego County Veterinary Medical Association, the fourth Tuesday of each month. Warren J. Dedrick, 904 S. Lemon, El Cajon, Calif., secretary.
- Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.
- Seattle Veterinary Medical Association, the third Monday of each month in the home of Dr. Fred Cummings, 5828-5th, N.W., Seattle, Wash.
- Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.
- South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. A. Majilton, 1093 N. E. 79th St., Miami, Fla., secretary.
- Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.



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(Continued on p. 38)

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(Continued on p. 40)

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Destroys fungi; sarcoptes scabiei canis; demodex canis; mites; fleas; lice. Repels ticks. Non Staining; not greasy; has no objectionable odor, destroys odors of external origin. Non Toxic; may be used daily in recommended dilution. Concentrated; one gallon makes four.

Gallon

\$13.95

Makes 4 gallons

Quart

\$4.00

Makes a gallon

Available nationally through
well known Distributors

Osco Chemical Company, Inc.

P.O. Box 2157, Atlanta 1, Georgia

A Successful New System

for the herd management
of bovine mastitis with

FURACIN[®]

- Proper herd management
- Treatment of mastitis with intramammary Furacin with or without penicillin
- Routine monthly bacteriologic tests of the milk to insure early diagnosis, treatment and cure

Important benefits

1. Remarkably low incidence of chronic mastitis, with practical absence of *S. agalactiae* infections
2. Less udder damage and loss of productive cows
3. Increase in milk production
4. Decrease in milk bacterial counts
5. Less time required of the veterinarian
6. Economical in cost
7. Control completely under professional direction

Furacin for mastitis is available in two dosage forms:

① Furacin-Penicillin Gel Veterinary: Procaine penicillin G and nitrofurazone in oil, a concentrated suspension of microcrystals. It contains 2 per cent Furacin and 13,333 units of procaine penicillin G per cc. in peanut oil with aluminum monostearate. Packaged in a 100 cc. vial for administration by

syringe and in 7.5 cc. single dose, applicator tubes. This Gel is stable for 3 years without refrigeration, until the expiration date on the label.

② Furacin Solution Veterinary: Aqueous 0.2 per cent solution of Furacin in 500 cc. rubber capped bottles. It is permanently stable.

Write for special mastitis booklet.

Winthrop-Stearns INC.
NEW YORK 18, N. Y. WINDSOR, ONT.

Exclusive distributors to the veterinary profession.

Furacin is the Eaton Laboratories, Inc., brand of nitrofurazone N.N.R.



Mastics AND Mastics P&S

100,000 units penicillin
50,000 mcg. dihydrostreptomycin

for control of
Mastitis

Tested and proved to be highly effective, MASTICS are also more convenient, more economical to use than other forms of udder treatment. They require no special equipment—no cannula or tube—no gadgets to increase costs. And now—

NEW PRICE REDUCTIONS

Mastics

	For Veterinarians	Retail Price
package of 25	\$3.50	\$5.00
package of 100	13.00	19.00
package of 500	11.00*	19.00*

(*per hundred)

Mastics P&S

	For Veterinarians	Retail Price
package of 25	\$4.00	\$6.00
package of 100	15.00	23.00
package of 500	13.00*	23.00*

(*per hundred)

NEW QUANTITY DISCOUNT

5% discount is now allowed on all orders of 1000 or more—including mixed orders of MASTICS and MASTICS P&S (500 each). MASTICS save up to 49c per treatment—a saving all farmers appreciate. Keep a large stock on hand to supply all your farmers' needs—MASTICS are available only through veterinarians (no drug or feed store competition for you)—and with the prices quoted above it's worth your while to be known as the source of supply.

The Martin Laboratories
Dept. R WEST CHESTER, PENNA.

Please send me a trial supply at the new low prices—

MASTICS	MASTICS P&S
— 25 . . . \$ 3.50	— 25 . . . \$ 4.00
— 100 . . . 13.00	— 100 . . . 15.00

NAME _____
ADDRESS _____
CITY _____ STATE _____

(CLASSIFIED ADS—continued from p. 38)

veteran. Will travel anywhere for the right opportunity. Equipped for large animal practice. Address "Box T 7," c/o JOURNAL of the AVMA.

Opportunity wanted to become associated in mixed practice. Desire long term lease, chance to buy into, or partnership with a reliable veterinarian. Licensed in California, Oregon, Washington; recent graduate, family. Reason for moving, ambition and initiative. Address "Box T 8," c/o JOURNAL of the AVMA.

Veterinarian desires position in mixed practice in Ohio or Southern States; 3 years small animal experience. Ohio and Arkansas license. Age 32, single. Address "Box T 9," c/o JOURNAL of the AVMA.

Interested in position with general practitioner. Desires partnership; then buy out practice upon owner's retirement. Prefer South or Southwest. Graduate of approved school; been in practice 2½ years. Age 27, married, 2 children. Address "Box T 11," c/o JOURNAL of the AVMA.

Relief work—Experienced, graduate veterinarian available for relief work while you are on vacation. Licensed. Address "Box S 10," c/o JOURNAL of the AVMA.

Englishman, age 26, graduated B.Sc., M.R.C.V.S., Edinburgh, Scotland, 1948, desires position in large animal practice in Western United States. Experience, 3½ years agricultural practice in England; at present gaining ranching experience in Canada. Address A. Tench, Alexis Creek, B.C.

Remittance must accompany advertisement

Experienced practitioner, age 31, wants position in Florida with possibility of becoming partner or buying practice. Can handle any type practice; have Florida license. Willing and able to work. Address "Box T 15," c/o JOURNAL of the AVMA.

(Continued on p. 44)

Parke, Davis Establish Brussels Branch

A new branch office has been established in Brussels by Parke, Davis & Company, which will serve approximately 8,400 physicians and 3,350 pharmacies in Belgium.

BROKEN TEETH

—repaired in bottom clipper blades.
Top and bottom blades sharpened to match. Save money—Guaranteed.
Prices on Request

HIGHLY SPECIALIZED SHARPENING
Sales—Repairing on Oster
and Stewart clippers.

Sharpened Blades Tested on Rabbit Fur

OSTER A-2 \$75 STEWART \$1.00

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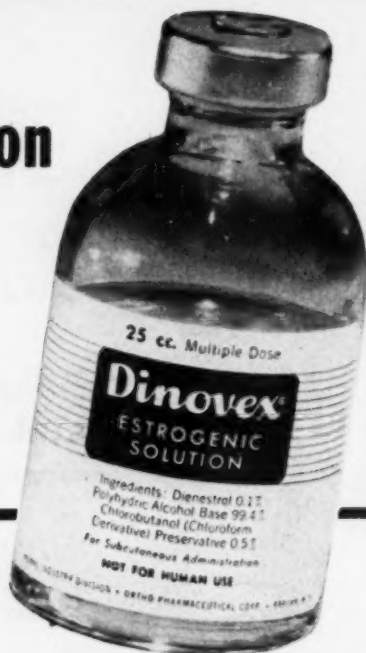
Whenever you use products under the NLC label—you know they're unsurpassed in advance research, production and potency—products that will help you sustain vigorous health in the herds under your care.

Scientifically formulated and tested in laboratory and field—NLC biologicals and pharmaceuticals march forward—into new avenues of research—into new principles of disease prevention and cure — for greater livestock protection.

Depend on the NLC label—it is made available **ONLY** to graduate veterinarians.



An estrogenic solution for non-settling cows and mares



Dinovex®

In 5 cc. vials...also 25 cc. multiple dose bottles

FOR ESTROGEN-DURING-ESTRUS THERAPY—Dinovex is an estrogenic preparation for the treatment of functional sterility in cows and mares, which come into heat but fail to settle because of insufficient production of estrogen.

Dinovex supplements the ovarian estrogen production during estrus. It provides the necessary stimulation to the maturing follicle to proceed toward ovulation and corpus luteum formation.

SHORTENS MARE'S HEAT PERIOD—In brood mares, Dinovex shortens the duration of the heat period to 2 to 4 days. With Dinovex, only one or two services per heat period are required—and these are more effective, because they are "timed" to ovulation. This results in a

higher rate of conception, and greater utilization of the stallion.

PROVED HIGHLY EFFECTIVE—Because Dinovex has proved highly effective in treatment of breeding inefficiencies of thousands of cows and mares, we are suggesting to dairymen and horse breeders, through advertising, that they ask you about this estrogenic solution as a possible aid to higher conception.

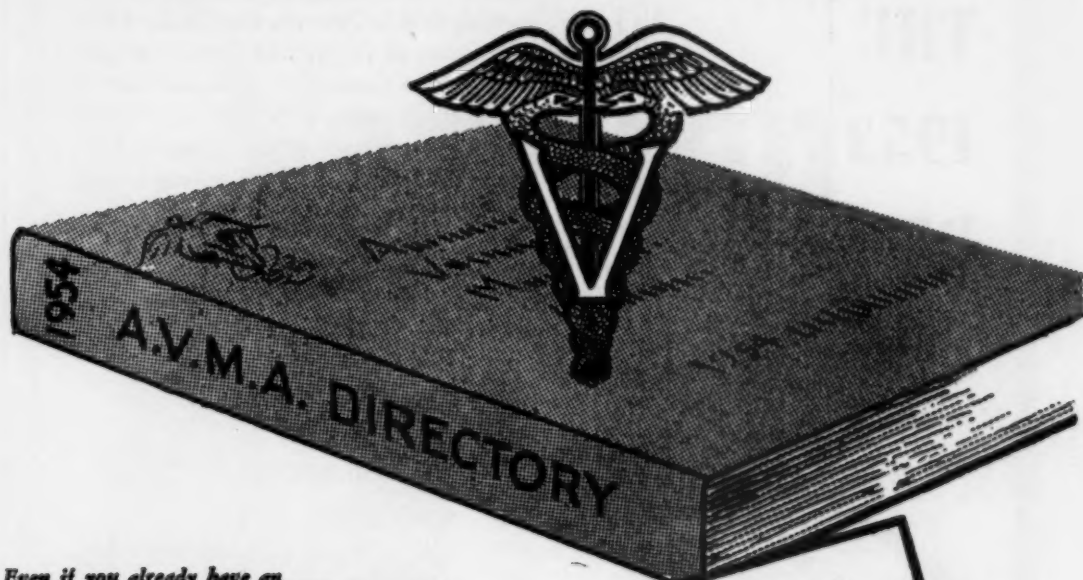
SUPPLIED—Available only to veterinarians, Dinovex is supplied in 5 cc. single dose vials, and 25 cc. multiple dose economy bottles. Order from your veterinary supply house.

LITERATURE—For literature giving full information on the use of Dinovex, address Dept. VM-2.

ORTHO PHARMACEUTICAL CORPORATION
Animal Industry Division, Raritan, New Jersey

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Even if you already have an old edition of the DIRECTORY, you need this brand-new revised and enlarged edition to give you up-to-date information about your profession.

Provides fingertip information on many phases of the profession besides listing more than 17,000 names and addresses of veterinarians.

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is mailed to AVMA members
as part of their membership
— at no extra cost.

The 1953 PROCEEDINGS BOOK is a complete printed record from the opening to the closing session of the 90th annual AVMA meeting held in Toronto, July 20-23, 1953. It contains all papers and discussions presented in the General Sessions and Section Meetings, Committee Reports, transcripts of business sessions of the House of Representatives, and reports of preconvention and postconvention conferences.

Material presented in the following Section Meetings will be of particular interest and value to every veterinarian:

- GENERAL PRACTICE
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- SMALL ANIMALS
- POULTRY
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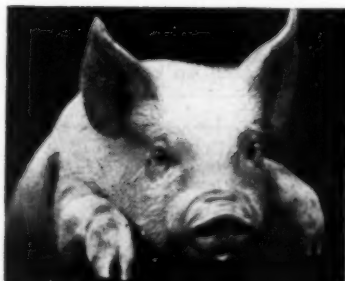
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Swine Enteritis and Calf Scours

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VetStrep, soluble granules of streptomycin, offers the advantages of efficiency, economy, and ease of administration. These granules dissolve readily in drinking water or milk.

VetStrep contains streptomycin, proved effective against both primary and secondary organisms most often responsible for enteritis in hogs, calves, dogs, and quail.

Extensive field trials have demonstrated that VETSTREP often clears up *swine enteritis* and *calf scours* in as little as one day. A summary of these studies is available on request. VETSTREP is effective also against air sac infection in chickens and blue comb in turkeys.

VetStrep is packaged in convenient sizes, available through usual sources of supply.

SUPPLIED: In screw-cap bottles of 15 Gm., 75 Gm., and 750 Gm.

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Position wanted by German veterinarian, recognized college, 32 years old, single. Five years' experience in large and mixed animal practice; desire permanent or temporary position as an assistant. Address "Box T 17," c/o JOURNAL of the AVMA.

Veterinarian desires position with progressive general practitioner in Southwest leading to partnership. Graduate of AVMA-approved school, six years' experience in general practice. Have some capital, age 28, married. Address "Box T 19," c/o JOURNAL of the AVMA.

Veterinarian, Latvian, four years' experience in the United States, middle aged, married, with children, looking for permanent employment in mixed practice. South preferred. Address Dr. Hugo Smilnieks, Box 202, Dyersburg, Tenn.

Wanted—Practices

Veterinarian released from Army in March wants to buy a practice, or work for a veterinarian leading to a partnership or ownership. Experience in large and small animals. Licensed in Michigan, Indiana, Wisconsin, and Minnesota. Address "Box T 4," c/o JOURNAL of the AVMA.

Florida veterinarian in army available in spring with license wants to buy large or small animal practice or work for a Florida veterinarian leading to a partnership or ownership. Address "Box T 5," c/o JOURNAL of the AVMA.

Experienced veterinarian will buy or lease established small animal or mixed practice in Connecticut, Virginia, or Middlewest. Address "Box T 12," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Would like to purchase active mixed practice in New Jersey or Pennsylvania. Please state gross, asking price, and down payment required. Address "Box T 14," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

Modern hospital, adjoining home plus 15 acres of land for sale near city of 70,000 in southwestern Michigan. A desirable deal for mixed practice. Address "Box T 10," c/o JOURNAL of the AVMA.

Veterinary drugs and instruments for sale, \$1,500; included desirable northern Iowa location. Address "Box S 8," c/o JOURNAL of the AVMA.

(Continued on p. 46)

WHITE'S

ANIMAL CASTRATION

A new textbook for TEACHERS, STUDENTS and PRACTITIONERS.

Price \$7.50

For sale by book dealers, also by the Author, George Ransom White, M.D., D.V.M., P. O. Lock Box 901, Nashville, Tennessee.

For TEAT PROBLEMS IN YOUR PRACTICE

SULFA impregnated— surgical dressings for the Teat Canal

To maintain unrestricted milk flow and provide antiseptic protection are of first importance in the care of injured teats, scab teats, and in post operative therapy.

Dr. Naylor Dilators act as an internal bandage to the teat canal. They provide gentle, non-irritating support and broad spectrum germicidal activity to injured teat mucosa. They promote normal tissue repair with a minimum of altered milking function of the streak canal.

STERILIZED — MEDICATED

Dr. Naylor Dilators are sterilized and medicated prior to packaging. The medication is IN the Dilators and is released slowly to maintain a prolonged antiseptic level.



Dr. Naylor Dilators are soft, supportive surgical dressings impregnated with Sulfathiazole and Methyl Violet. Fit either large or small teats. Smooth, rounded tip for easy insertion.



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MEDICATED TEAT DILATORS

DISPENSING PACKAGE (Contains 12 Dilators) 3.00 per doz. →

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**YOUR ARMOUR SALESMAN
CAN NOW SUPPLY
YOUR REQUIREMENTS FOR
FORT DODGE¹ BIOLOGICALS,
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Your convenience is our business. We are glad to have the opportunity to offer you a single source of these items in addition to the fine products of Fromm and Cutter and the full line of veterinary products of our own manufacture:

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Lucrative mixed practice for sale. Located in Sheboygan County, Wisconsin, cheese center of the world. Modern home, complete sell out. Been practicing 37 years; am retiring. Write or call Dr. John H. Klug, Random Lake, Wisconsin.

Small animal hospital for sale or lease with option to buy. Located in Miami, Fla. Information to Florida license holders upon request. Address "Box S 20," c/o JOURNAL of the AVMA.

A golden opportunity for veterinarian who wishes to semi-retire in California. New home with small hospital for sale and a good net with little work.

Terms. Address "Box M 16," c/o JOURNAL of the AVMA.

Small animal hospital near Los Angeles, for sale. No real estate; 40-animal capacity. Gross \$26,000; \$12,500 cash or \$13,500 terms with \$5,000 minimum down. Address "Box W 17," c/o JOURNAL of the AVMA.

Established mixed practice for sale in Southern California; includes new brick home with small animal clinic. Down payment, \$10,000; balance monthly at 6% interest. Total price, \$29,500. Address "Box M 17," c/o JOURNAL of the AVMA.

Excellent small animal practice for sale in Southern California. Fully equipped; no real estate. Priced to sell. Address "Box T 13," c/o JOURNAL of the AVMA.

Remittance must accompany advertisement

Well-established, mixed practice for sale. Four-bedroom, two-bath home, excellent condition; clean, modern hospital, x-ray, diathermy, ultra-violet lights; completely equipped. Terms, \$35,000. Address Dr. B. F. Brennan, 515 South Boundry Ave., Aiken, S.C.

Mixed practice for sale in Middlewest. New home and adjacent office with facilities for small animals; 80% large animals, 20% small. \$5,000 down will handle. Address "Box T 18," c/o JOURNAL of the AVMA.

(Continued on p. 48)

REGISTERED **BURDIZZO** TRADE-MARK



BLOODLESS CASTRATOR

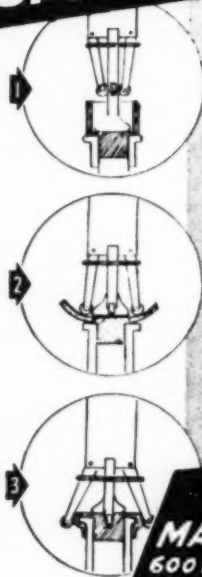
ELIMINATES CASTRATION LOSSES — NO INFECTIONS — NO SHRINK — NO SCREW WORM RISKS!
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Here's the new bottle capper everyone's turning to for capping bottles of serum or other products when the rubber stopper is of the sleeve type: having a center plug core and a cylindrical outer portion for providing a double seal inside and outside of the bottle neck. It insures a better seal than hand attached corks in three simple steps: (1) a plunger applies the closure cork, then (2) smooth-acting rollers press down the cylindrical portion, and (3) positively seal it around the outer bottle neck.

The Teeman Bottle Capper with chrome-plated steel parts is completely sanitary, positive in operation. Eliminates the extra labor and disagreeable performance of bottle capping by hand. Interchangeable heads will accommodate any size bottle from 5 cc. up to 500 cc. Price, \$179, f.o.b. Sioux Falls, S. Dak.



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Here, for the first time in an American book, is all the basic knowledge and the latest discoveries in the diagnosis, treatment and control of animal skin disorders so vital to everyday practice.

Written by a veterinarian of great experience and international recognition and a successful researcher-teacher-writer, this unusually comprehensive, factual and helpful reference brings you a thorough, systematic discussion of animal skin diseases, including etiology, clinical symptoms, differential diagnosis and complete practical therapeutic methods.

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325 Pages 162 Illustrations \$10.00

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(In Active Preparation)

edited by Thomas C. Jones, Lt. Col., V.C., U.S.A.
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This, the first substantial work since 1918 on postmortem examination of animals presents an invaluable diagnostic technique. Sponsored by The Armed Forces Institute of Pathology

and The American Veterinary Medical Association, this book helps standardize diagnostic procedures and gives veterinarians latest improved information on one of the most important diagnostic techniques—necropsy. Includes general principles of necropsy procedures and efficient operating procedures for both large and small animals.

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A unique book confined to diagnostic methods in a field where such books are rare. Deals with herd and pet animals. Ten of the nineteen chapters concern the differential diagnosis of conditions affecting the various systems; circulatory, digestive, respiratory, etc. Other chapters deal with allergic reactions, urine analysis, clinical bacteriology, helminthology, hermatology, and postmortem technique. Available in United States Only.

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A revised edition of this important book in veterinary science. Only species of parasites of economic importance and common occurrence are discussed. Chapters are included on protozoa, helminths, immunology and serology, external parasites, prevention of helminthic infections and prevention of parasitic infections. Also, a graphic atlas of hosts showing the commoner parasites in the organs in which they occur. Available in United States only.

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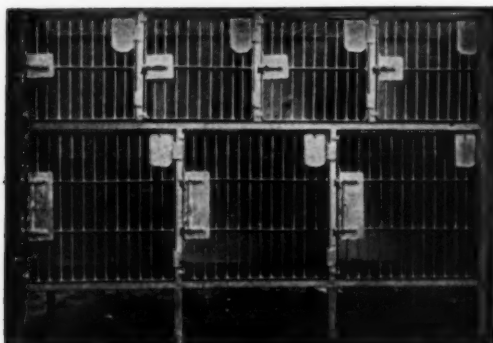
These laboratories have been established to aid veterinarians in the diagnosis of obscure as well as common ailments in large and small animals. The chief aim of our staff is to give quick and accurate diagnosis at all times.

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California's oldest iron works.

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5422 Mission Blvd. Riverside, California

(CLASSIFIED ADS—continued from p. 46)

Miscellaneous

Rare collectors' item for sale. A copy of Markham's Maisterpiece, a book on veterinary medicine published in London in 1675. Address Mary Nelson, Box WW, Palm Springs, Calif.

Bovine Prolapse Preventer—Payton Utero-Vaginal Prolapse Preventer. Quickly, easily applied to any size cow. Aluminum, re-usable, non-irritating, sanitary. Noninterference with placenta release. Excellent for vaginal protrusion; dispensing. See article JOURNAL of the AVMA, December, 1951. Only \$3.00; two for \$5.00. Prepaid. Dr. Jerome Payton, Morris, N.Y.

Pregnancy Diagnosis—in mare from 45th to 150th day. Write for vials and mailing tubes. Price: \$7.00; 2 or more tests, \$6.00 each. Pregnancy

(Continued on p. 52)

Dr. Boley Joins Cutter Staff

Lyle T. Boley, D.V.M., has been appointed field veterinarian by Cutter Laboratories, Berkeley, Calif., according to an announcement by W. A. Flint, field sales manager.

Living in Kewanee, Ill., Dr. Boley will be work-



Dr. Lyle T. Boley

ing as a consulting field veterinarian out of the company's Chicago office.

Dr. Boley, who hails from Topeka, Kan., received his degree of doctor of veterinary medicine from Kansas State College. In 1941, he joined the Air Corps and received the Air Medal and Distinguished Flying Cross. Since his honorable discharge in 1945 with the rank of captain, he has maintained a veterinary practice in Kewanee, Ill., in partnership with Dr. Glenn I. Case.

Arnold

THE STANDARD IN QUALITY
PHARMACEUTICALS



F.C. SWINE WORM POWDER

(Anthelmintic for large round worms in swine)

Active Ingredients: Sodium Fluoride, Areca Nut, Calomel, Arsenic Trioxide.

Suggested Dosage: Mix 1 pound with 200 pounds of dry, finely ground feed.

Offer as only feed for two days. This should be enough for 75 to 100 fifty pound shoats.

Check these advantages —

EFFECTIVE: Fluoreca Calarsen is a field tested, time proven formula. It not only contains the most effective anthelmintic known today for large round worms in swine, but also provides purgative, tonic, diuretic and antiseptic action.

SAFE: Field reports have indicated that the occasional "piggish" individual that over-eats will vomit Fluoreca Calarsen instead of "burning-up" and dying.

ECONOMICAL: Costs only a few pennies per pig.

EASY TO USE: This free flowing powder is easily mixed with feed.

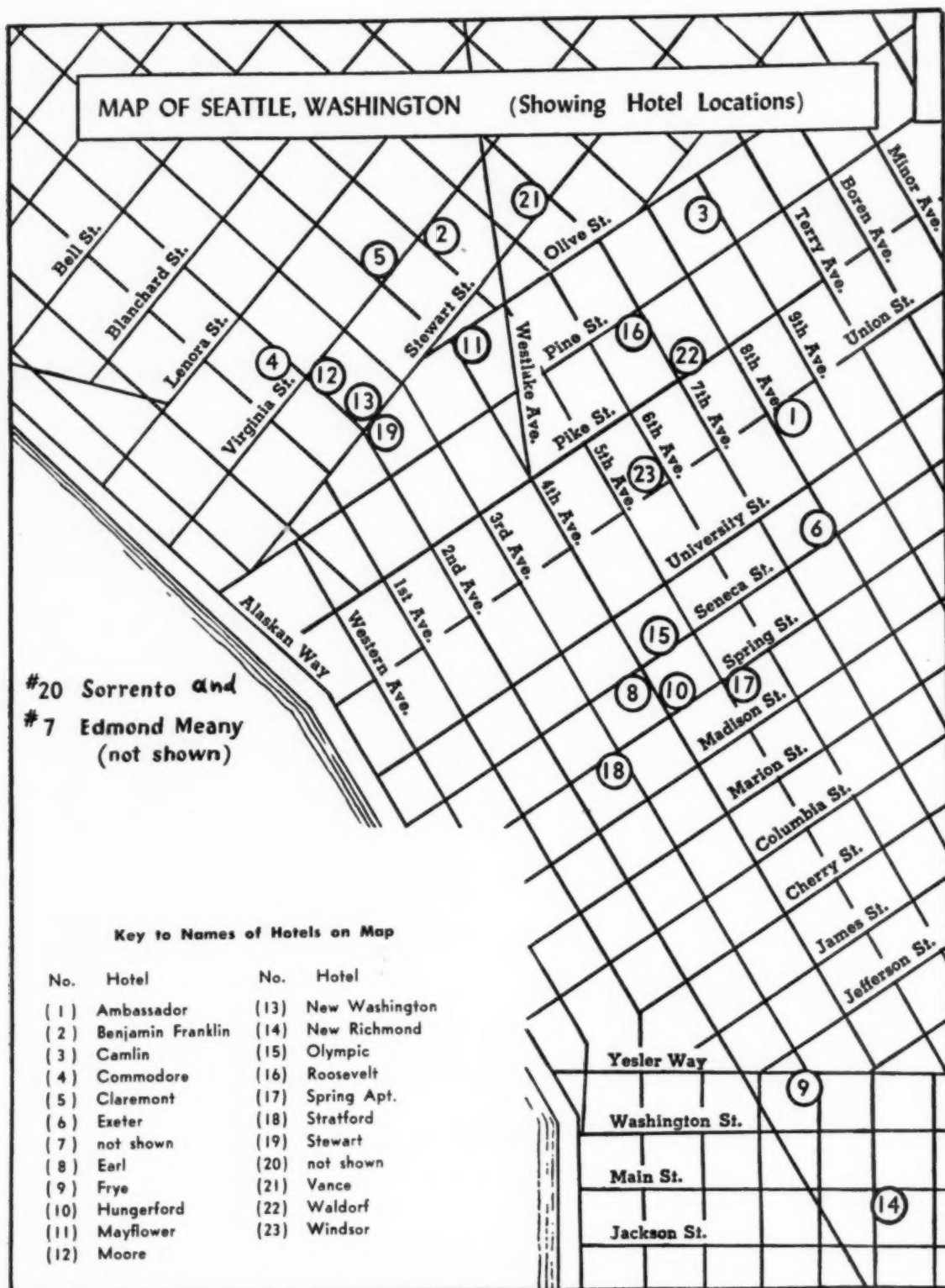
DIFFERENT: Dusty rose color and packaged in glass jars with dispensing label.

	1 Doz.	3 Doz.	6 Doz.	12 Doz.
4 ounce size	5.00	14.25	27.00	50.00
Unit Cost	0.42	0.40	0.38	0.35
1 Pound size	15.00	42.75	81.00	150.00
Unit Cost	1.25	1.19	1.13	1.05

Arnold

LABORATORIES
NEW CASTLE, INDIANA

MAP OF SEATTLE, WASHINGTON (Showing Hotel Locations)



Key to Names of Hotels on Map

No.	Hotel	No.	Hotel
(1)	Ambassador	(13)	New Washington
(2)	Benjamin Franklin	(14)	New Richmond
(3)	Camlin	(15)	Olympic
(4)	Commodore	(16)	Roosevelt
(5)	Claremont	(17)	Spring Apt.
(6)	Exeter	(18)	Stratford
(7)	not shown	(19)	Stewart
(8)	Earl	(20)	not shown
(9)	Frye	(21)	Vance
(10)	Hungerford	(22)	Waldorf
(11)	Mayflower	(23)	Windsor
(12)	Moore		

HOTEL RESERVATIONS — SEATTLE CONVENTION

Ninety-First Annual AVMA Meeting, Aug. 23-26, 1954

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

HOTELS AND RATES			
HOTEL	SINGLE	DOUBLE	TWIN BEDS
1. Ambassador	\$5.00	\$6.00	
2. Benjamin Franklin	\$7.00	\$10.00-11.00	\$11.00-15.00
3. Camlin	\$7.50	\$10.00	\$12.00
4. Commodore	\$4.50	\$6.00	
5. Claremont	\$4.50	\$5.50-10.00	
6. Exeter	\$5.50	\$7.50	\$9.00
7. Edmond Meany	\$6.00	\$8.00-9.50	
8. Earl	\$4.50	\$6.00	\$7.00
9. Frye	\$4.00	\$6.00	\$7.50
10. Hungerford	\$5.00-6.00	\$7.00-9.00	
11. Mayflower	\$7.00	\$10.00-11.00	\$12.00-14.00
12. Moore	\$5.00	\$7.00	\$8.00
13. New Washington	\$5.50-12.00	\$8.50-14.00	\$9.50-16.00
14. New Richmond	\$3.50-4.00	\$5.00-5.50	\$6.50
15. Olympic	\$6.00-15.00	\$8.00-15.00	\$9.50-15.00
16. Roosevelt	\$6.00	\$8.00	\$10.00
17. Spring Apt.	\$5.00	\$7.00	\$8.00-9.00
18. Stratford	\$5.00	\$7.00	
19. Stewart	\$5.50-7.50	\$6.50-8.50	\$9.50
20. Sorrento			\$6.00-8.00
21. Vance	\$5.75	\$5.50-6.75-7.50	\$7.50-8.00
22. Waldorf	\$2.50-3.50(*)	\$3.50-5.00(*)	\$7.50
	\$5.00	\$6.50	
23. Windsor	\$6.00	\$8.00	\$9.00

(*) without bath. Tear Here

HOTEL RESERVATION FORM — AVMA CONVENTION — SEATTLE

To: Housing Bureau, Seattle Hotel Association,
315 Seneca Street, Seattle, Washington

Date

Please make reservations indicated below:

(Three Choices MUST Be Shown)

First choice hotel

Second choice hotel

Third choice hotel

Accommodations and Rates Per Day Desired:

- ☐ Single room at \$.....
- ☐ Double-bed room at \$.....
- ☐ Twin-bed room at \$.....
- ☐ Suite* at \$.....

(*) Those desiring suites should clearly specify type of accommodations wanted.

Arriving on (date) at a.m. p.m.

Leaving on (date) at a.m. p.m.

Room will be occupied by (attach list of additional names if necessary).

Name City and State or Province

Name City and State or Province

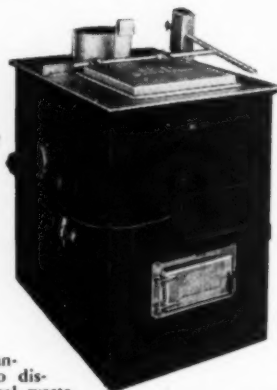
Your Name (Print or Type)

Street Address City and State or Province

AMAZING! JOSEPH GODER INCINERATOR HELPS YOU

get rid of refuse

IN JUST MINUTES!



Disposal No. 5-T

There's a safe, sanitary, easy way to dispose of pathological waste, animal waste, laboratory waste. Destroy it completely under the intense blast gas flames of a Joseph Goder Disposal No. 5-T!

This remarkable incinerator, designed especially for the veterinarian, has a special grate to catch and eliminate liquids in the refuse — operates odorlessly, economically — employs a "jet power" principle in its burning mechanism. Not a free-flow gas burner, but a much intensified blast-type gas burner.

This feature, plus its exceptional refractory lining and its fool-proof insulation, make the Joseph Goder 5-T what it is — one of the safest, fastest disposals available to the veterinarian.

SEE FOR YOURSELF! Wet, damp, or dry, the refuse "JUST VANISHES" in a Joseph Goder Incinerator.



See your classified telephone directory for the name of the Joseph Goder Representative nearest you or write to Joseph Goder Company for complete information.

JOSEPH GODER INCINERATORS
5121 N. Ravenswood Ave. • Chicago 40, Illinois

(CLASSIFIED ADS—continued from p. 48)

Diagnostic Laboratories, H. S. Lames, D.V.M., Dysart, Iowa.

Artificial insemination instruments. Disposable obstetrical sleeves 20 cents each. Package of 20 including detachable chest band—\$5, postpaid. Samples and complete catalog on request. Breeders Equipment Co., Flourtown, Pa.

Clipper Blade Sharpening

Have your clipper blades sharpened by an expert with 28 years of practical factory training. We know how your blades must be ground to cut like new. Also clipper repairing. All work guaranteed to satisfy you or money back. Now serving veterinary colleges, and over 500 satisfied veterinarians. Why not you? 24-hour service. We ship insured prepaid. Avoid C.O.D. charges; enclose 75 cents for each set with blades. We are headquarters for Oster and Stewart clippers and blades. Complete clipping supplies; upper and lower replacements. Write for information on Oster and Stewart quality clippers and products. Service Grinding and Supply Co., 903 Chicago St., Racine, Wis.

Wanted to Buy

Wanted, two books—Diseases of the Horse's Foot by H. Caulton Reeks and Exterior of the Horse by Gabaux. Write giving prices and condition of books. Address "Box T 16," c/o JOURNAL of the AVMA.

Received Too Late to Classify

Recent graduate wanted who desires permanency; must be ambitious, honest, a hard worker with a pleasing personality. Good opportunity for right man in fine Northwest area. Address "Box T 23," c/o JOURNAL of the AVMA.

Graduate Ontario, 1954, conscientious, single, wants to assist with mixed or small animal practice in Midwest or Canada. Prefer commission, partnership, or future ownership. Address "Box 115, O.V.C.," Guelph, Ontario.

BAI veterinarian retiring April 30 wants position as field contact man in West Coast area for company producing either biologicals, antibiotics, animal foods, or instruments. Address "Box T 24," c/o JOURNAL of the AVMA.

CENTRAL PLAINS

DIAGNOSTIC LABORATORY

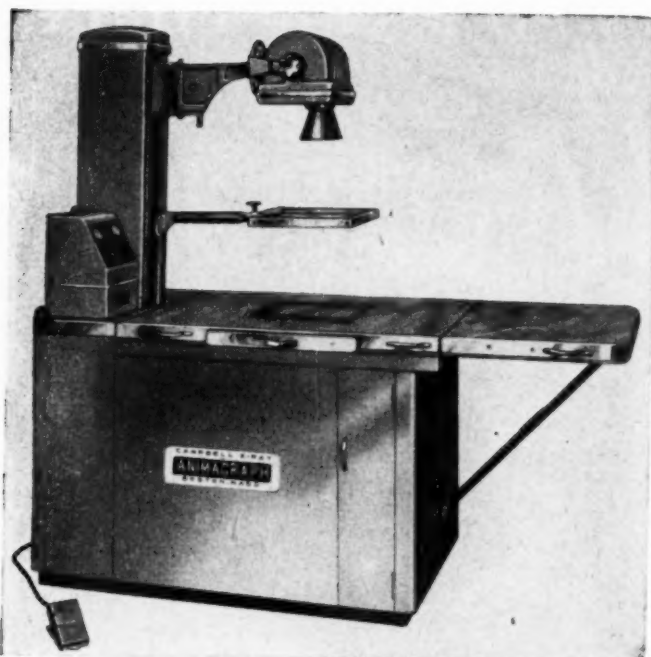
P.O. Box 8364 Oklahoma City 14, Okla.

Offers a complete laboratory diagnostic service to graduate veterinarians only.

Pathologic, bacteriologic examinations and other recognized laboratory diagnostic procedures performed by veterinary pathologists.

Examinations and reports in 24 hours.

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X-RAY ANIMAGRAPH

TRADE MARK REG. U.S. PAT. OFF.
U.S. PAT. NO. 2,323,704 JULY 6, 1943

BEWARE OF IMITATIONS

4 Outfits **1** Exclusive
in Veterinary
Design
FLUOROSCOPY (motion pictures)
RADIOGRAPHY (still pictures)
THERAPY (for skin treatment)
PORTABLE (large animals outside)

The only complete x-ray machine designed from the ground up for the exclusive use of the veterinarian.

**THE BETTER GRADE
SMALL-ANIMAL HOSPITALS
INSTALL ANIMAGRAPHS**

You owe your clients complete service including x-ray. You owe yourself safe, efficient apparatus designed especially for your use.

The Animagraph is a necessity to public health.

CAMPBELL X-RAY CORP.

110 Cummington St., Boston 15, Mass.
Kindly send me descriptive information, including prices and terms, on the Campbell X-Ray Animagraph.

Dr.
(Please Print)

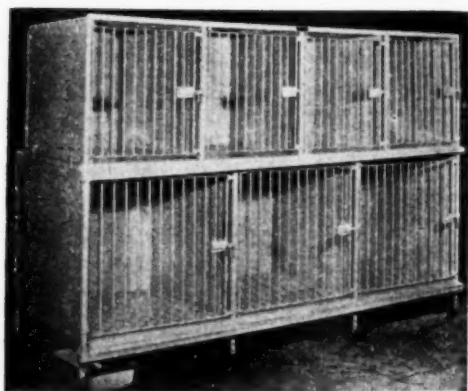
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THE ANIMAGRAPH (Latest Model)
MAKE SURE THE X-RAY MACHINE YOU BUY REFLECTS
SOME THOUGHT OF THE VETERINARIAN IN ITS DESIGN
Don't make the mistake of purchasing a medical outfit
designed for use on the human body.

*Write for
Prices and
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Use This
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DE LUXE CAGES AND DOG DRYER



IMPROVED 7-CAGE DE LUXE DRAIN UNIT

The small size is 7½ feet long with 3-30" cages in bottom and the large unit 9 feet long with 3-36" cages in bottom.

Also available in removable tray style, or plain flat floor style without gutter drains in front.

Our units are available in 3, 5, 7 or 12 cage units, or any combination you need.

Write for NEW cage booklet; also DRYER FOLDER
NOTE NEW LOCATION

Baltimore Wire & Iron Works
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Our improved dog dryer with entirely transparent doors and larger blower is proving most satisfactory to our numerous users. Many have recommended them to their friends saying "it's doing a wonderful job."

A new highly effective



SQUIBB

treatment for **MASTITIS**

DISTRYCILLIN*

ointment veterinary

SQUIBB

**All the convenience of a liquid plus
all the advantages of an ointment**

Effective dosage—Each 5-gram disposable syringe of Distrycillin Ointment Veterinary contains 200,000 units of potassium penicillin and 200 mg. of dihydrostreptomycin, formulated in the thorough-penetrating Squibb Base—plasticized hydrocarbon gel.

Broad spectrum—The two antibiotics have an extremely broad anti-bacterial spectrum—broader than any single antibiotic. They insure activity against almost all cases of bovine mastitis.

Thorough penetration—The Squibb Base assures thorough distribution of the antibiotics throughout the glandular tissue. The smooth, free-flowing base retains the same consistency over a wide range of temperature—from 5°F. to 140°F.

Convenient syringes—Supplied in easy-to-use, time-saving disposable plastic syringes—with slip label. Available in boxes of 12. Order now from your veterinary supply house.

For further information, address: SQUIBB, *Veterinary Department*, 745 Fifth Avenue, New York 22, N. Y.

Sold only to veterinarians

*DISTRYCILLIN is a trademark.

A NAME YOU CAN TRUST



WHAT'S HIS *Preference?*

When you come right down to it, dogs, themselves, play a major role in making Gaines the largest-selling dog meal in America! Dogs really *show* their taste preference for Gaines.

All ingredients of Homogenized* Gaines are combined into crunchy, appetizing little granules. And unlike ordinary meals, Gaines never gets flaky or pasty—doesn't pack down in the dish. In fact, Gaines Meal is so appealing in texture, aroma and taste that many dogs enjoy eating this food dry. That makes Gaines easy to feed, excellent for time-saving self-feeding methods.

Most important is the fact that Gaines Meal provides balanced amounts of every food essential dogs are known to need. This complete nourishment is in every package, every mouthful, every granule of Gaines.

Veterinarians, breeders, sportsmen and pet owners have clearly shown *their* brand preference by keeping Gaines Meal in first place among all dog meals. Obviously, they believe in selecting a health-protecting dog food! **Don't you?**

**Uniform Nourishment
Guaranteed*

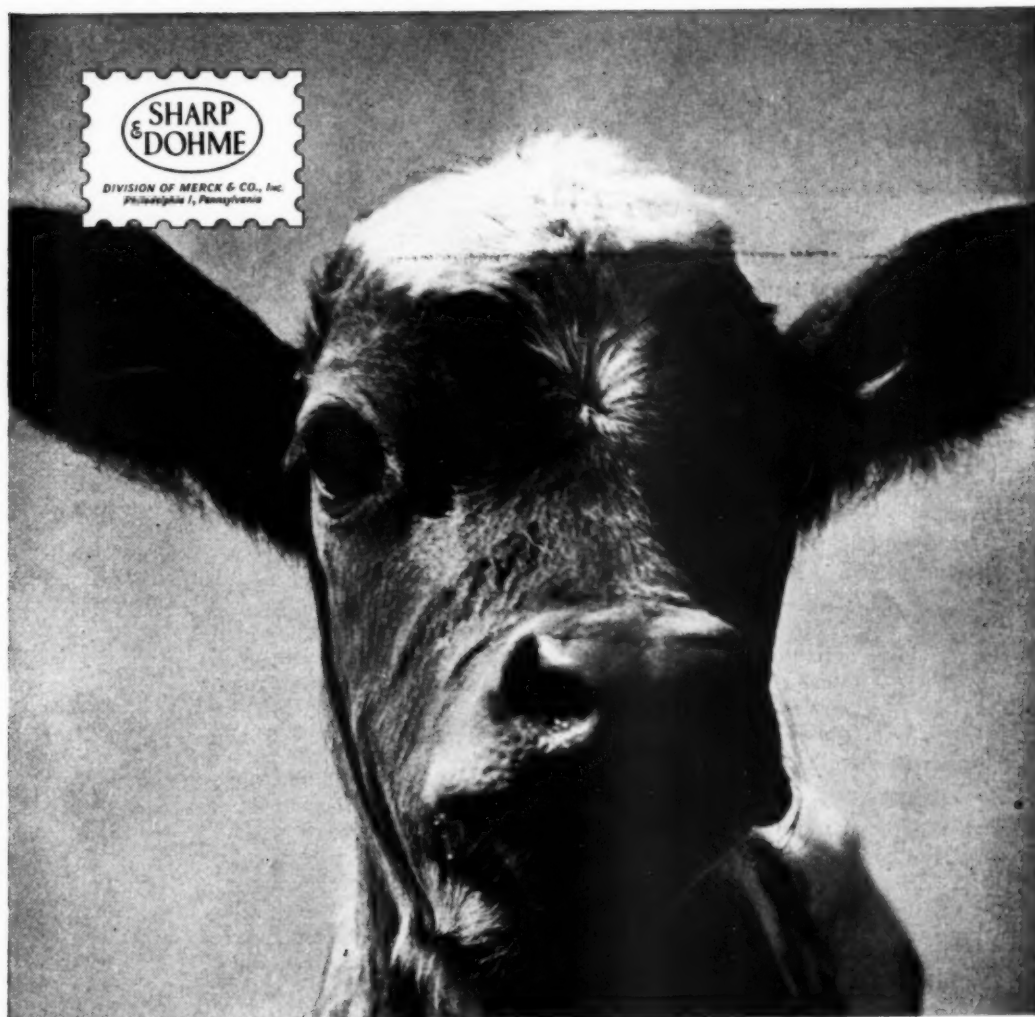
Gaines

*America's Largest-Selling
Dog Meal*

NOW HOMOGENIZED!

A Product of General Foods





Losses from calf scours checked with
SULFATHALIDINE®
PHTHALYLSULFATHIAZOLE

FOR PREVENTION AND TREATMENT—a single daily dose of SULFATHALIDINE is effective in controlling calf scours.

SULFATHALIDINE, administered orally, exerts 95% of its action in the intestinal tract...is minimally absorbed, virtually non-toxic. That means—smaller dosage, lower treatment cost than with the other sulfonamides.

In complicated cases of calf scours, in sheep dysentery and intestinal infections in small animals, administer BOVIMIDE® Triple Sulfona-

mide Suspension with Kaolin. 2 cc. per lb. of body weight daily will combat infection, check diarrhea.

QUICK INFORMATION: SULFATHALIDINE available in slotted tablets (0.5 Gm. and 4.0 Gm. each) and powder (2.0 Gm. per tsp.). BOVIMIDE supplies in each 100 cc. 6.8 Gm. Sulfathalidine, 0.6 Gm. each of sulfamerazine and sulfamethazine and 10.0 Gm. Kaolin and alcohol 5%. Dosage information on request.

Sharp & Dohme, Veterinary Department.



Ru-Bac **Taboles**

Supply variable rumen organisms which aid materially in correcting digestive disorders of ruminants

These Taboles provide a simple, dependable method of inoculating the rumen of calves, cattle, and sheep with viable rumen bacteria for the prevention and treatment of rumen dysfunctions that occur with ketosis, chronic bloat, toxemias, nutritional diarrhea, and retarded growth.

Each RU-BAC Tabole contains a natural and cultured rumen concentrate of microflora representing a minimum of 25 billion viable organisms in a pH-controlled base.

Supplied in: Pkg. of 50 taboles.

HAVER - GLOVER LABORATORIES
KANSAS CITY, MISSOURI



RABIES VACCINE

(Lockhart)

PHENOLIZED RABIES VACCINE CONTROLS OUTBREAK

According to Frederickson *et al.*,¹ the 1950 to 1951 rabies epizootic in St. Louis was controlled quickly, by mass vaccination of the dog population, after quarantine measures alone had failed. Neighboring communities continued to have a high incidence of rabies. Although only about 0.5 percent of the 38,006 dogs vaccinated in the clinics received modified live virus vaccine, and the overwhelming majority received the usual 20 percent phenolized vaccine of caprine and ovine origin, not a single case of postvaccinal paralysis was reported to the Health Division. These figures would indicate that the danger of postvaccinal paralysis in dogs, following administration of phenolized rabies vaccine, may have been greatly exaggerated recently.

1. Frederickson, L. E.; Willett, J. C.; Smith, J. E., and Price, E. R.: Metropolitan rabies epizootic controlled by vaccination. *Vet. Med.* 48 (1953) 276-279, 288.
(from *The North American Veterinarian*, Nov. 1953)

Experience — The article at left as news is not new. It is timely only because it is human nature to seek the sensational, and overlook tried and time-proven methods. Phenolized rabies vaccine has been used as an efficient control measure for many years.

Efficiency — Immunity developed by phenolized rabies vaccine for a practical period of time, is as good as that from any other rabies vaccine, as reported by the Public Health Service.

Economy — The unit cost of phenolized rabies vaccine is far the lowest of any. It is available in bulk packages and amounts at quantity discount prices.

Emphasis —

Lockhart Rabies Vaccine is *produced by veterinarians — advertised only to veterinarians — sold only to veterinarians* — and never sold at a discount to any agency. It is **TRULY**

A VETERINARIAN'S PRODUCT

ASHE LOCKHART, INC.

"Producers of Better Biologics for Graduate Veterinarians."

800 Woodswether Road

Kansas City, Missouri

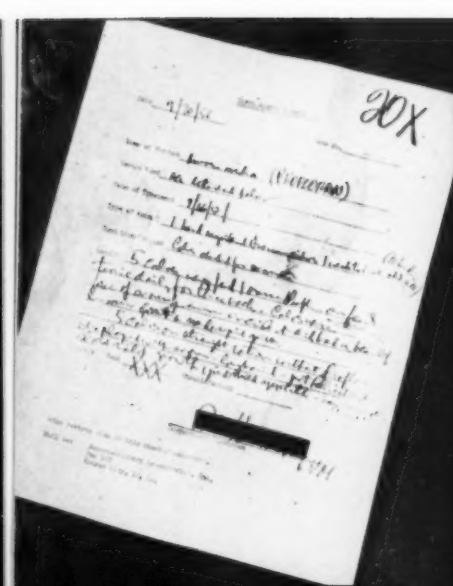
case report 20x

treatment of calves with PROFLOLAN

A herd of registered Guernsey calves, one week to 2 months old, was split into two groups serving as tests and controls for PROFLOLAN. Calves were kept 500 yards apart in same type of housing. The same rations were provided each group.

TEST GROUP received one ounce of PROFLOLAN on feed daily for three weeks. These calves were free of calf scours or pneumonia. They developed beautiful, luxuriant coats and maintained good appetites. Rapid growth was observed.

CONTROL GROUP was fed same ration without PROFLOLAN. They were plagued with calf scours and pneumonia complex. Their appetites were just fair and a low amount of hay was consumed. They were short haired, pot bellied and showed slow growth rate. For detailed information about PROFLOLAN, see panel below.



No organisms in PROFLOLAN yet rumen flora is restored rapidly

If you haven't yet used PROFLOLAN, you may have a few questions about it, which the paragraphs below may help answer.

1. PROFLOLAN IS A POWDERED MICROFLORAL FOOD. No organisms in PROFLOLAN—but instead, the special kinds of vitamins, starches, proteins, and minerals that the rumen flora thrive and flourish on.
2. PROFLOLAN FEEDS EXISTING RUMEN FLORA. There is no transplanting of dried, frozen or fresh rumen contents with PROFLOLAN therapy. It has been established that though greatly depleted, rumen organisms are never entirely destroyed. Hence, PROFLOLAN merely feeds existing flora in the rumen.
3. PROFLOLAN IS INDICATED IN ALL RUMEN DYSFUNCTIONS. And in young and old animals as well. Field cases range from impaction, milk fever, chronic bloat, and rumen atony to secondary ketosis, anorexia, etc.
4. PROFLOLAN IS GIVEN BY MOUTH OR ON FEED. It is packaged in 2 pound jars, boxes of six. One jar fully mixed with water or spread over feed, has proved effective in most cases where PROFLOLAN was indicated.
5. NOW IS THE TIME TO TRY PROFLOLAN. Hundreds of practitioners have already reported on PROFLOLAN's unusual effectiveness. If you haven't tried it yet, then now is the time. Ask your Jen-Sal branch or distributor about PROFLOLAN today.

Jensen-Salsbery Laboratories, Inc.
Kansas City 41, Missouri

